SynCalc

synapse

SynCalc™

Advanced Electronic Spreadsheet

By Mike Silva
Converted to the Apple IIe/IIc by Joe Vierra

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C64 SynCalc Manual Addendum

NOTE: Commodore 64 owners:

The *SynCalc* manual was originally written for Atari computers. If you are using *SynCalc* with a Commodore 64 please consult this list of changes. When the manual describes a specific keystroke or computer hardware feature that is not familiar to you, refer to this section.

What You Will Need (p. 5)

1. A Commodore 64 home computer
2. A Commodore disk drive (up to 2).
3. The program diskette, enclosed in the inside front cover pocket of the manual.
4. A TV set or other video monitor. A black and white set will work.
5. Blank diskettes for storing data.

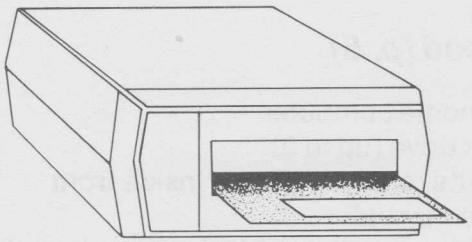
Loading the program (p. 7 and following)

Starting the System

First remove any cartridges from your computer. (Exception: *SynCalc* works with Epyx's Fastload cartridge). Turn on your computer and check the drive(s) to make sure the busy light is not on. Open the door on each disk drive (if you have more than one) and remove any diskette that may be present. Leave the drive door(s) open for the time being. You will insert the program disk later.

If your equipment is turned off, begin by turning on your TV set monitor. Next, turn on one disk drive. With two drives, turn on only the drive you wish to have designated as drive 2.

Take the program diskette from the pocket on the inside front cover of the manual. Remove it from the paper sleeve and grasp the diskette by the label edge with the label side up. Carefully insert it into the active disk drive with the label edge entering last (see illustration). Gently push the diskette all the way in. Close the drive door.



Disk inserted in drive.

If you have one disk drive, you may wish to skip this paragraph. If you have two disk drives and want to use both with *SynCalc,* enter the following command:
LOAD "NINER",8
When the READY prompt returns, enter:
RUN
When the program is run, it configures the current drive as drive 2. Next, turn on the other drive, which becomes drive 1. Remove the program disk from drive 2.

Place the program disk in drive 1 and enter this command:
LOAD "SYNBOOT",8,1
The program loads into the computer and then runs automatically.

REMEMBER: *SynCalc* will only load from a disk drive with a Device Number of 8, which indicates drive 1.

While loading, the title screen showing the copyright notice appears on the screen.

SEE PAGE 10 (p. 10 addenda)

NOTE: *SynCalc* for Commodore has more memory available and an extra row in the screen display. This accounts for discrepancies between screen illustrations in the manual and what you actually see on your screen.

Here is a summary of the starting procedure for one disk drive:

1. Remove any cartridges (except FastLoad).
2. Turn on your computer, display, and disk drive.
3. Insert the *SynCalc* program disk in drive 1 and close the drive door.
4. Type LOAD "SYNBOOT",8,1 [RETURN].

Cursor Control

In descriptions of onscreen cursor movement, replace all references to "CTRL and the arrow keys" with "SHIFT and the cursor keys." The cursor keys are the two keys marked with "CRSR" and a pair of arrows in the lower right corner of your keyboard. As with most Commodore programs, use the cursor keys alone to move the cursor down or right, and with SHIFT to move the cursor up or left.

Function Keys

Replace all references to the OPTION, SELECT, and START keys with Commodore function keys according to this table:

Atari Key	Commodore Key
OPTION	f3
SELECTION	f5
START	f7

Other Keys

To type the carat or exponentiation symbol (^) press the up arrow key. To type ESC press the left arrow key in the upper left corner of your keyboard. Use the "pound" key to switch between upper and lower case. To type the underline character (p. 92) hold [SHIFT] and press [—]. Replace references to the "Atari logo key" with "Commodore key." To enter the escape code for printer control, type [SHIFT] [←].

TABLE OF KEYSTROKE CONVERSIONS

Atari Key	Commodore Key
[^]	(up arrow) [↑]
ESC	(left arrow) [←]
CAPS LOWR	(pound sign)
_ (underline)	[SHIFT] [—]
LOGO	COMMODORE KEY
[BACK SPACE]	[INST DEL]
[CTRL] [INSERT]	[SHIFT] [INST DEL]
[SHIFT] [CLEAR] or [CTRL] [CLEAR]	[SHIFT] [CLR HOME]
[CTRL] [DELETE]	[TLR HOME]

Correcting Typing Errors (pp. 22-23) and Editing Cell Entries (pp. 26-33)

Use standard Commodore screen editing key combinations to edit your entries. See the above table for specific keystrokes that you can use.

Formatting Data Disks (pp. 17-19)

During the disk formatting process, you are prompted for a disk title. Type in a disk name of up to eight characters in length and press [RETURN]

VC to SC (p. 114)

Since there is not a version of VisiCalc for the Commodore 64, the conversion utility is not included, and does not appear on the command menu.

Special Characters (p. 125)

The Expert Mode command to toggle off the automatic cursor advance is /K. This command turns the feature off or on each time it is invoked. This also applies to Atari *SynCalc.*

File Compatability (p. 125 and following)

Files from the Commodore 64 version of *SynCalc* are not compatible with *SynTrend, SynFile+*, Atari VisiCalc, or AtariWriter. *SynCalc* files saved as Data may be compatible with other Commodore programs that use the DIF (Data Interchange Format) standard. *SynCalc* files saved as Test can be loaded into Commodore word processing programs if the programs do not use a special file storage format.

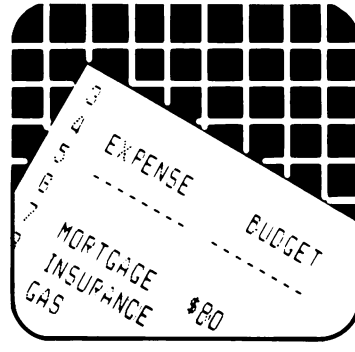
Update—Condensed Printing

Information applies only to Atari *SynCalc.*

SynCalc™

Advanced Electronic Spreadsheet™

By Mike Silva



Requires ATARI Home Computer with minimum 48K RAM memory and disk drive. Optional: printer, Axlon 128K Rampower,™ Mosaic 64K Select.™

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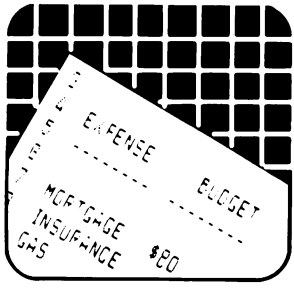
Contents

	Page
1 General Introduction	1
How To Use This Manual	1
Overview Of The Program	3
What You Will Need	5
The ATARI Keyboard	6
A Word On Diskettes	6
Loading The Program	7
2 Tutorial	11
Lesson One	11
Main Menu	12
The Worksheet	14
Formatting Data Disks	17
Scrolling The Window And Automatic Repeat	20
Writing On The Worksheet	23
Saving Your Work	33
Loading A Worksheet	35
Safeguarding Your Work	39
Making Backup Copies Of Diskettes	39
Lesson Two	40
Copying A Formula	41
Formatting The Screen Display	52
Unformatting The Screen Display	56
Fixing Titles In Place	58
Adjusting Column Widths	60
Splitting The Screen	61
Recalculation	63
Text Overflow	64

Lesson Three 65
Creating A Household Budget 65
Printing The Worksheet 88
Referencing Labels 90
Global Commands 93

3 Reference 97
Numbers And Formats 97
Exponential Notation 98
Formula Evaluation 98
Built-In Functions 99
Summary of Functions 100
Alphabetical Function Reference 102
Command Reference 111
Data Loading And Saving (DIF) 125
Sharing Information 126
SynCalc Won't Load 130
Customer Service Numbers 131
Back-up Copies 131
Hints For Saving Space 131
Hints For Improving Speed 131
Error Messages 132
Glossary 135
Index 143



1 General Introduction

SynCalc™ is an easy to use electronic spreadsheet program that has many uses in both the home and office. *SynCalc*'s personal applications might include calculating income taxes, setting up a personal budget, or balancing a checkbook. *SynCalc* also has many business applications including sales projections, financial ratios, engineering analysis, or cost estimates. *SynCalc* functions like a business or scientific worksheet, combining the convenience of a pocket calculator with the powerful memory and electronic screen capabilities of the personal computer. You will find *SynCalc* to be a versatile and useful tool for performing calculations and storing the information in a readable format designed by you.

SynCalc also has powerful forecasting and planning capabilities that allow easy error correction and the examination of various alternatives for forecasting purposes, otherwise known as "what if" analysis. *SynCalc* is easy to learn and use, yet provides advanced features to satisfy the most sophisticated professional. Worksheets may be saved to disk for easy retrieval later or printed in whole or in part on your printer. *SynCalc* is also fully compatible with *SynFile+*™, *SynTrend*™, *VisiCalc*®, and AtariWriter™, thereby providing a complete applications package to the ATARI home computer user.

How To Use This Manual

This manual has been divided into four sections. These sections are designed to give a clear presentation of the material and easy access to the information and specifications required to run the program. Both the computer novice and seasoned professional will find this

program and manual easy to use and understand. As many examples as possible have been included to make the instructions clear.

SECTION ONE contains an overview of the program and information about your equipment needs. It covers getting the program started (loaded) and an explanation of the keyboard and some of its special keys and functions.

SECTION TWO is a tutorial. We found, after extensive testing, that the best way to introduce a program is through a step-by-step creation of a sample worksheet. This allows you to go through the program in a methodical fashion, learning to use the various features as they appear. In reading the instructions, please try all the options as they are described (even if you are not sure that you will be using them). This will familiarize you with the overall operation of the system, making the routine functions quick and simple. The example is designed to familiarize you with the more common functions of *SynCalc*. While not all functions will be shown, the example will give you a strong background for your further explorations into the program. The tutorial consists of three lessons which take you from the basics of *SynCalc* to some of the more sophisticated applications.

SECTION THREE is the Reference Section. Here you will find information on *SynCalc*'s built-in functions, Expert User Commands, advice on data loading and saving, sharing information, *SynCalc* and DIF, *SynTrend*, *SynFile+*, *VisiCalc* and AtariWriter, advice on loading *SynCalc*, hints for saving space and improving speed, error message index, and a glossary.

The error message index is an explanation of any messages or warnings which may appear on your screen while you are using the program. This index will suggest how you might correct the situation which has caused the error message to appear.

Before starting it is a good idea to take a look through the glossary in the back of the manual. Please read through the definitions to make sure that they are used in the same way to which you are accustomed. Every effort has been made to keep the language as close to spoken English as possible. If you should encounter any unfamiliar words or do not understand a particular function while using the program, the glossary can be a handy reference.

SECTION FOUR is the Appendix and contains the index for this manual. The Index alphabetically lists subjects and their page numbers to help you quickly locate information in this manual.

Overview Of The Program

SynCalc is a completely menu driven electronic spreadsheet. Its calculating, editing, formatting, and scrolling features combine to make it a powerful, versatile, and handy tool for the calculation, manipulation, and storage of data in worksheet form.

SynCalc is as easy to use as a pocket calculator, but also utilizes the electronic screen capabilities and powerful memory of the personal computer. You can scroll the spreadsheet in any direction to look at any part of the sheet. The spreadsheet can also be split into two parts, allowing you to view two sections of the sheet at once.

SynCalc has been designed for first-time users as well as experienced spreadsheet users. *SynCalc*'s menu driven interface guides the first-time user through the operations in a step-by-step manner, while the corresponding expert user commands are echoed at the top of the screen. In this way, the beginner can quickly learn the expert user commands and will in no time be using *SynCalc* like a professional. The experienced user can instead enter expert user command mode to efficiently execute the desired functions.

The sheet itself has been organized as a grid of columns and rows. These columns and rows intersect and define thousands of entry positions for data. Each position can take an entry of an alphabetic label, a number, or a formula to be calculated. You can individualize the appearance of each entry by formatting the sheet according to your own specifications. You can, for example, set up your income tax calculations to look like the forms you are using.

SynCalc will remember the formulas and calculations you are using to work through a problem. You can then go back at any time and change a previously entered number and *SynCalc* will automatically recalculate all the relevant formulas and display the new results. This feature makes *SynCalc* a powerful planning and forecasting tool since it allows you to experiment with and examine a number of alternatives. For example, you might want to know how fluctuating sales figures can affect your company. This testing of alternatives is called "what if" analysis and is one of the major applications of spreadsheet programs.

SynCalc allows you to change labels, numbers, or formulas in any of the rows and columns on the worksheet, and will instantly restructure the worksheet to reflect these

changes. Formulas, numbers, and labels can be copied from one position to any number of successive positions on the worksheet. You can also sum, average, or otherwise manipulate rows, columns, or other ranges of cells. The space in which titles and numbers are displayed can be shortened or lengthened without affecting how they are stored in memory. Finally, your electronic worksheet can be saved to disk and/or printed in whole or in part.

You can quickly learn the basics of operating *SynCalc* by carefully following the tutorials in this manual. As you become more familiar with its operation, features, and applications, you will be able to perform more sophisticated operations with *SynCalc*. Once you have learned the basics of *SynCalc*, do not be afraid to use your imagination and experiment with it. You will be surprised at how easy it is!

What You Will Need

1. An ATARI home computer
2. An ATARI disk drive (up to 2).
3. The program diskette, enclosed in the inside front cover pocket of the manual.
4. At least 48K of memory.
5. A TV set or other video monitor. A black and white set will work.
6. Blank diskettes for storing data.

Optional: ATARI printers for obtaining hard copy versions of reports. You can also use the Axlon Rampower 128K or Mosaic 64K Select to increase your computer's capacity.

The ATARI Keyboard

The ATARI keyboard is very similar to a typewriter keyboard, although the placement of special characters in some instances is different. The shift key on the ATARI keyboard works like the typewriter shift key. That is, you hold down (SHIFT) in order to obtain uppercase letters when you are in the lowercase mode or to type characters that appear on the top line of a key that has more than one character on it. For example: to type $, you hold down (SHIFT) and hit the key on the top row with the 4 and the $ on it. Note that unlike the typewriter keyboard, the characters * and + do not require the shift key.

A Word On Diskettes

You cannot be too careful when it comes to handling the diskettes. Each diskette is a small magnetically coated plastic disk sealed in a protective square cover. Through the oval cut-out you can see the magnetic surface of the diskette.

Take careful note of the following guidelines for the handling of diskettes:

1. NEVER TOUCH THE EXPOSED MAGNETIC SURFACE with your fingers or any implement.
2. Protect the diskette from dust by storing it in its paper sleeve.
3. Keep it at least six inches from magnetic fields, such as those generated by a TV.
4. Extremes of temperature (such as in a car trunk on a warm day) could destroy a diskette, and you would lose your data, or the program.
5. Don't bend, staple or write on the square cover with a hard pen or pencil (use only soft felt tip pens).

Loading The Program

Introduction

SynCalc can be run with just the program disk if you are not going to store any of your worksheets to disk for later use. However, you will need at least two disks to run *SynCalc* if you do wish to save your worksheets to disk. These are: the program disk (which is provided), and a blank disk to be used as a data disk. Formatting the data disks will be covered in the Tutorial Section.

You always load the program disk into the computer using disk drive 1. With two disk drives, the data disk can go into drive 2 without removing the program disk from drive 1. However, once the program has been loaded into the computer from drive 1, it can be removed so that the drive is free to be used for a data disk.

The Write Protect Notch on a Disk

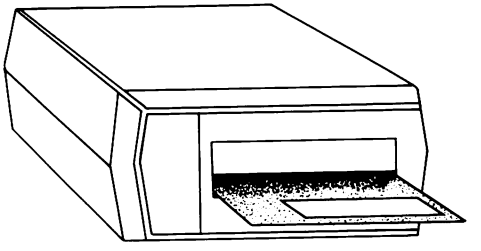
Disks have a "write protect" notch on the side of the jacket which, when covered with tape, prevents the disk from being written on. Do not cover the notch with a write protect label on the DATA disks unless you are certain you do not wish to store any more data on the disk.

Starting the System

Remove any cartridges and check the disk drive(s). Make sure that the busy light is not on. Open the door on each disk drive (if you have more than one) and remove any diskette that might be present. Leave the drive door(s) open for the time being. You will insert the program diskette later.

If your equipment is turned off, begin by turning on your TV set or monitor. Next, turn on your disk drive(s). The drive motor will start up and run for a few seconds. When it stops, the BUSY light will go out, but the POWER light will remain lit.

Take the program diskette from the pocket on the inside front cover of the manual. Remove it from the paper sleeve and grasp the diskette by the label edge with the label side up. Carefully insert it into drive 1, with the label edge entering last (see illustration). Gently push the diskette all the way in. Close the drive door.



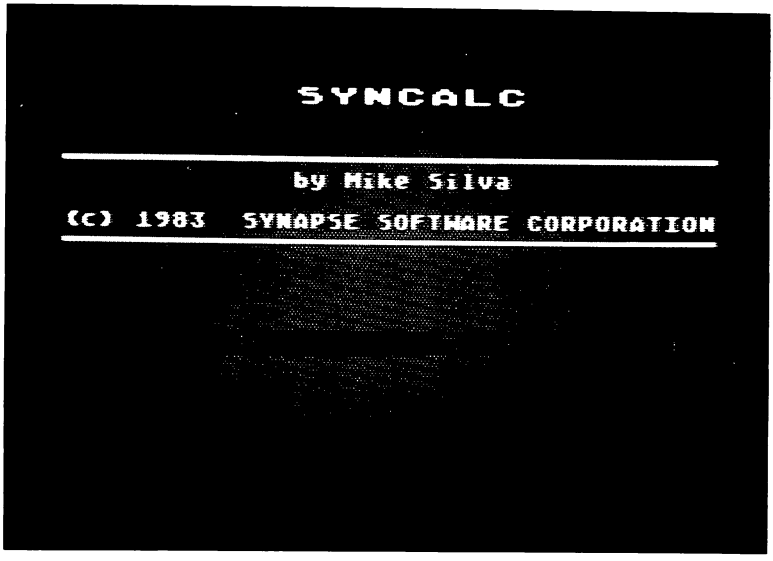
Disk inserted in drive.

REMEMBER: Programs will only load from a disk drive with a DRIVE CODE number of 1. See your disk drive manual for details on setting the DRIVE CODE number.

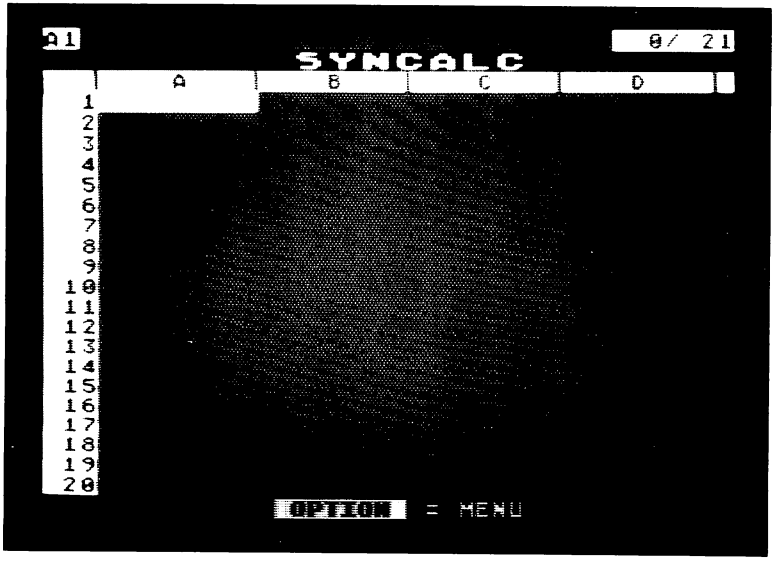
Now, turn the computer on by pushing the computer's power switch to the ON position.

If your computer was already on, turn it off, pause a moment then turn it back on. The drive takes about a minute to load the program into RAM.

While loading, the title screen showing the copyright notice will appear on the screen.



After about a minute, the worksheet will be displayed:



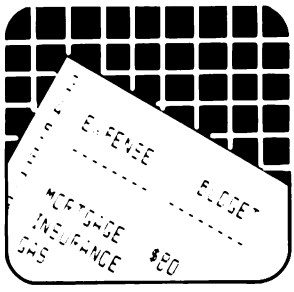
NOTE: The memory indicator will be nnn/NNN where nnn = amount of memory used in K bytes and NNN = total amount of memory available in K bytes (1 K byte is equal to 1024 characters). When you notice that the memory indicator shows that the worksheet is becoming full, you should save the worksheet to disk and then reload it. This may free up additional memory space. The amount of memory will vary according to the configuration of your computer.

If your screen does not look like the one above, remove your program diskette from the drive. Turn off the disk drive and the computer and start over, using the same instructions above.

Here is a summary of the starting procedure:

1. Remove any cartridges.
2. Turn on your display screen and your disk drive(s).
3. Insert the *SynCalc* program disk in drive 1 and close the drive door.
4. Turn your computer on.

When the program has loaded correctly and the BUSY light is off, open the drive door and gently remove your program diskette. Put it back in its sleeve before returning it to the inside front cover pocket of your *SynCalc* binder.



2 Tutorial

Lesson One

Main Screen

You should have the Main Screen on your display now. The cursor is resting at the top-left corner of the worksheet and can be moved using (CTRL) and the arrow keys. At the very top of the screen is the message line. To the far right on this line is the memory indicator, telling you how many K bytes of memory you have used and how many in total are available for data storage. When you are using the menu mode of *SynCalc*, the corresponding Expert User Commands are echoed on the left side of this line so that a beginner can learn the Expert User Commands while in menu mode. On the far-left edge of the message line is an indicator telling you in what cell the cursor is positioned on the worksheet. Error Messages are also displayed on this line and are helpful guides for correcting any incorrect key strokes.

The next line below the message line is the title line. Below the title line is the border containing identifying letters for each column on the worksheet. It starts with A through Z, continues with AA through AZ, then BA through BZ and so on up to DX for a total of 128 columns. The vertical border on the left side contains row numbers 1 through 255. No matter where you are in the worksheet, the border will show the appropriate column letters and row numbers.

The very bottom line of the Main Screen is where the Main Menu appears. Pressing (OPTION) moves you from the

worksheet to the Main Menu. Pressing [ESC] will take you back to the worksheet at any time. Once you are in the Main Menu, the left and right arrow keys are used to move the cursor to the appropriate selection on the Main Menu.

To experiment with this:
PRESS [OPTION].

Notice the bottom line turns to a blue color and the worksheet fades slightly.
PRESS [ESC].

The Main Menu line returns to its dark gray and the message "[OPTION] = MENU" is displayed. Use [CTRL] and the arrow keys to experiment with moving the cursor on the worksheet if you like. While you experiment, watch the indicator at the far-left of the message line change as the cursor moves from cell to cell.

Main Menu

Once again, let's activate the Main Menu:
PRESS [OPTION].

The Main Menu consists of four headings:
1. LOAD/SAVE
2. TEXT
3. NUMERIC
4. COMMAND

Each of these Main Menu options generates a sub-menu or entry window which will be fully described in later sections. For now, let's look at a brief description of each option.

The LOAD/SAVE option is used for loading already existing worksheets, saving newly created or edited

worksheets, loading or saving data, formatting data disks, renaming files, and deleting files. Data Interchange Format (DIF™) files from compatible programs can also be loaded into memory to be used with *SynCalc*.

The LOAD/SAVE option also provides you with three different types of saves to disk. The first (WRKSHEET) is saving the entire worksheet including your formulas, labels, formats, etc. The second (DATA) is saving to a DIF file. In this type of save the formulas and formats are lost. You can specify any block of cells that you wish to save. The last type (TEXT) saves a specified cell range as a text file. Current format options are preserved in a text save, and these files can be merged with AtariWriter.

Also on the LOAD/SAVE sub-menu are the Delete and Rename options. With the Delete option, you can delete a specified file from a disk. The program includes a confirmation prompt to make certain that you do want to delete the file you have indicated. The Rename option allows you to change the name of a specified file.

The TEXT option is used for entering text headings of any kind onto the worksheet.

The NUMERIC option is used for entering numeric figures and formulas onto the worksheet.

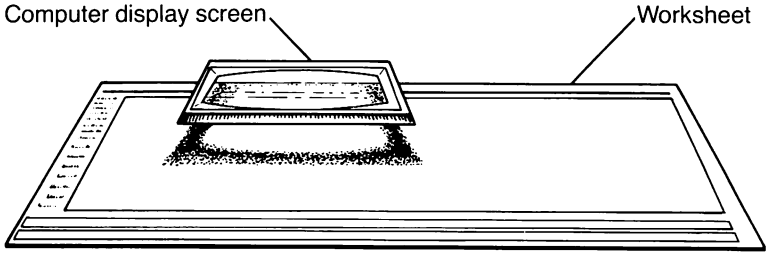
The COMMAND option allows you to select from a variety of operations including direct cursor movement, blanking cells, clearing the worksheet, formatting cells, copying cells, etc.

The Worksheet

PRESS (ESC) to return to the worksheet from the Main Menu.

The worksheet is like ruled paper awaiting entries. Each entry is placed at an address such as B35, describing its column and row location. This address is called a cell location, cell reference, or simply a cell. Since the entire worksheet is too large for your screen display, the worksheet is displayed one section at a time. It is like looking through a small window onto a portion of a large landscape. Holding (CTRL) down and repeatedly pressing the arrow keys causes the sheet to scroll, bringing into view the new portions as the previously displayed sections scroll off the screen. With an option called GOTO it is possible to move the cursor directly to the desired section of the worksheet. This feature will be described in greater detail in a later section of the manual.

Another feature with *SynCalc* is the ability to view two parts of the same worksheet on the display screen at the same time. This allows you to work with both sections, entering, and changing formulas and data as needed. You might picture this as two small windows through which you view the large landscape.

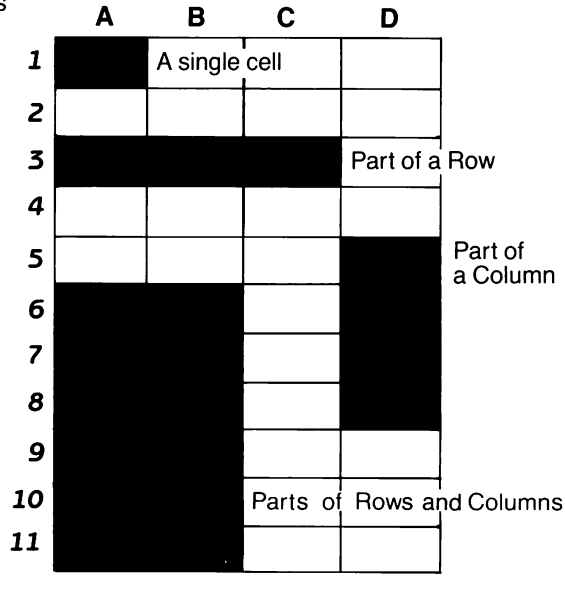


Window over worksheet

Cell Ranges

One or more cells that form a contiguous block are called a range. A single cell is the smallest possible range. Ranges may be part of a single column or row or may span several columns and rows and are denoted by specifying the upper-left and lower-right cell addresses.

Worksheet elements



Formulas and Labels

A label, number, or formula can be entered into any cell. A formula is a calculation instruction like A1 + 100-A3. This translates as taking the value at cell A1, adding 100, and subtracting the value at cell A3. The result is then entered on the worksheet at the current cursor position. Although the formula is stored in the cell, only the current numeric value of that formula is actually displayed on the screen. This process will be discussed more fully in a later section.

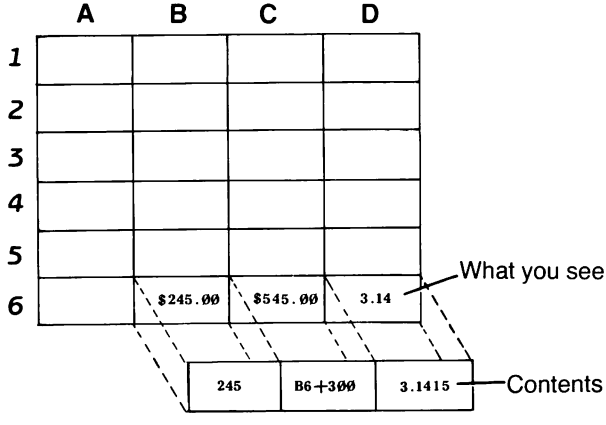
A label is a text entry which can be used to title a column or row indicating the contents or nature of the data in that column or row.

Cell Address

A cell address is the column letter and row number of the cell (i.e. F25 refers to column F, row 25).

Display Formats

With *SynCalc* you can change the appearance of each cell on the worksheet without affecting the contents of the cell. Such things as column widths, the presence of dollar signs, and left or right justification are only a few of the formatting options available to you with *SynCalc*. No matter what format options you choose, the cell contents are accurately preserved.

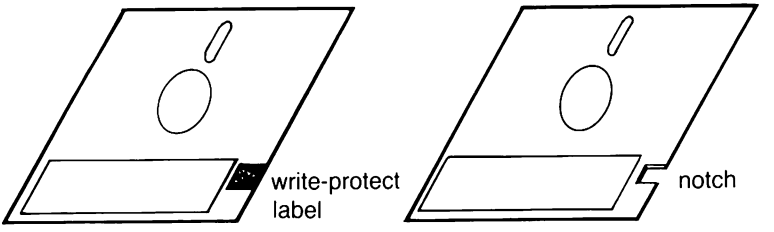


Contents and Display formats

Formatting Data Disks

Diskettes must be first formatted using the format option on the LOAD/SAVE sub-menu to store the information you will be creating with *SynCalc*. Take out a blank diskette or a diskette with information or files that you no longer want to keep. **Formatting will erase everything on the disk.** Notice that the diskette has a small notch cut on its side. This notch is sensed by your disk drive and will allow the computer to write information on the diskette surface. The

SynCalc program disk does not have this notch because it is write-protected. *SynCalc* formats disks to be ATARI DOS II compatible.



Disk with notch and disk with write-protect label.

It is a good idea to apply a label to your diskette with an identifying title and a date. The label goes on the diskette jacket near the manufacturer's label. If the label is already on the diskette, use a felt-tip pen to enter the title and date. Using a ballpoint pen or pencil may damage the disk.

With *SynCalc* loaded into your computer, place the blank diskette into disk drive 1 (if you are using one disk drive). Make sure that you have removed the program diskette and placed it in its protective cover. If you have more than one disk drive, place the data disk into the appropriate drive (1 or 2).
PRESS (OPTION) for the Main Menu.

Make sure the Main Menu cursor is over the LOAD/SAVE option.
PRESS (RETURN) to make your selection.

A sub-menu is immediately generated just above the Main Menu line. Use (CTRL) and the arrow keys to move the cursor over to FORMAT.
PRESS (RETURN).

The sub-menu will change and you will be allowed to select the disk drive where the blank diskette is located.

Use (CTRL) and the arrow keys to select the drive.
PRESS (RETURN)

At this point you are given a last chance to cancel the formatting operation. A prompt appears indicating that you should press (START) to proceed. If you do not want to proceed, press any alphanumeric key or (ESC) to abort the operation. When you format a disk, everything that is presently on it will be erased. For this reason, you should be sure that there is nothing on the disk that you want to keep.
PRESS (START) to format the disk.

After the disk drive becomes quiet and the busy light goes off, open the drive door and carefully remove the newly formatted diskette. Never open the drive door to insert or remove a diskette while the busy light is on. This could damage the diskette. Place the formatted diskette back in its protective paper sleeve.

At this point you may want to format some more diskettes for use with *SynCalc*. If so, simply repeat the procedure as it was just described. However, for the purposes of following the tutorials, one formatted data diskette will be enough.

Scrolling The Window And Automatic Repeat

As we discussed earlier, the worksheet scrolls left, right, up, and down to allow viewing of the entire worksheet in sections. When you first load *SynCalc*, the screen window is positioned for viewing the upper-left section of the electronic sheet. By repeatedly depressing (CTRL) and the arrow keys, portions of the sheet will disappear as new portions come into view. Experiment with these keys until you are comfortable moving the cursor. Now, take the cursor back to cell A1.

Automatic Repeat

Actually it is possible to reach the far edges of the sheet much more quickly by making use of ATARI's automatic repeat feature. Starting from the upper-left section of the worksheet,
PRESS (CTRL) (↓) and hold them down.

The cursor and the window will scroll downwards automatically to the bottom edge of the sheet where it will stop. Notice the row numbers change as you scroll down, indicating the row position of the cursor as it goes by. Your computer emits a "Beep" when you have reached the edge of the worksheet and cannot go any further.
PRESS (CTRL) (→) and hold them down.

This time the cursor will scroll off to the right until it reaches the far right-hand edge of the sheet. Notice the column headings change as you scroll to the right, indicating the column position of the cursor as it goes by. Once again, your computer will emit a "Beep" letting you know that you cannot go any further.

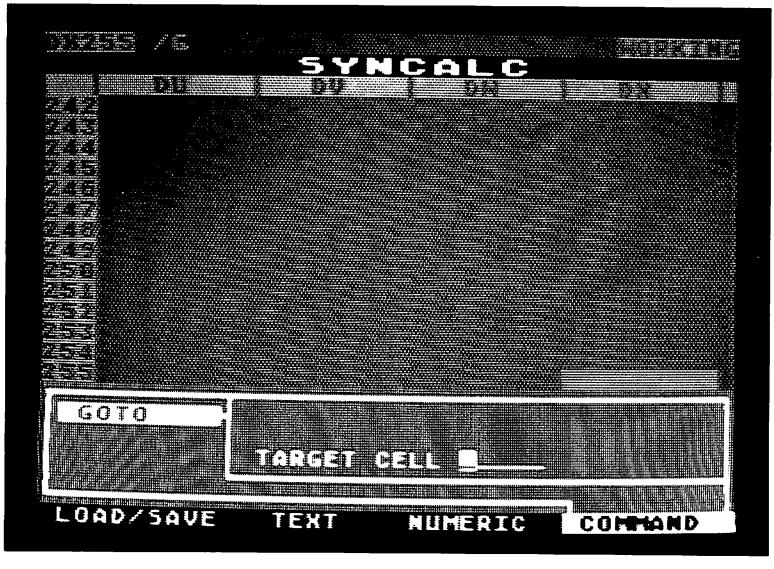
Direct Cursor Movement (GOTO)

There is even a quicker way of jumping the cursor from one position to another on the worksheet. This is known as direct cursor movement and is executed with the COMMAND option on the Main Menu.
PRESS (OPTION) to call up the Main Menu.

With (CTRL) and (→) move the cursor to COMMAND on the Main Menu:
PRESS (RETURN).

The COMMAND sub-menu will appear on your screen display. With (CTRL) and the arrow keys, move the cursor on the sub-menu to GOTO:
PRESS (RETURN).

The GOTO sub-menu will appear:



All that is required now is to fill in the coordinate of the target cell where you want the worksheet cursor to be placed.

ENTER: M24
PRESS [RETURN].

The sub-menu will disappear and you will find the cursor positioned directly below M and opposite 24, cell M24. Try another example on your own if you want to become more comfortable with this command.

Correcting Typing Errors

When you are in a sub-menu or edit window, you can use the ATARI edit keys to correct any typographical errors. For example, you can simply press [BACK SPACE] to back the cursor over and erase the entries you wish to change. Let's look at an example.
PRESS [OPTION] for the Main Menu.
The cursor should be positioned over COMMAND. If it is not, use [CTRL] and the arrow key to move the cursor to COMMAND.
PRESS [RETURN].
Now move the cursor to GOTO on the sub-menu and:
PRESS [RETURN].

In the space requesting a coordinate entry,
ENTER: F222

With [BACK SPACE] you can erase the last 2 so that your entry will read F22. At this point you could press [RETURN] to move the cursor directly to coordinate F22. However, if you decide that you do not want to jump the cursor after

all, you can abort the entire command by pressing (ESC). The sub-menu will disappear and you will find yourself back on the worksheet.

If you enter a row greater than 255 or a column greater than DX, the system will emit a "Beep" and display an error message to alert you that you have made an incorrect entry.

Most other standard ATARI editing commands will also function including (CTRL) (INSERT), (CTRL) (DELETE), (SHIFT) (CLEAR), and (CTRL) (CLEAR).
PRESS (ESC) to return to the worksheet.

Writing On The Worksheet

Up to this point, your worksheet should not have anything written on it as we have just been experimenting with scrolling the sheet and moving the cursor. Writing on the worksheet will be just as easy. However, should your worksheet have writing on it at this point, you can easily clear it.

Clearing the Worksheet (Erase Sheet)

The entire worksheet can be cleared using the Global Erase command. To do this,
PRESS (OPTION) to activate the Main Menu.
Move the cursor to COMMAND and:
PRESS (RETURN).
Move the cursor to GLOBAL and:
PRESS (RETURN).

Global commands act upon the entire worksheet. Move the cursor to the ERASE command and:
PRESS (RETURN).

You will then be told to press START to proceed. If you press anything else, you will be returned to the worksheet.
PRESS START.

The worksheet will be cleared and the cursor returned to cell A1.

Cursor Memory

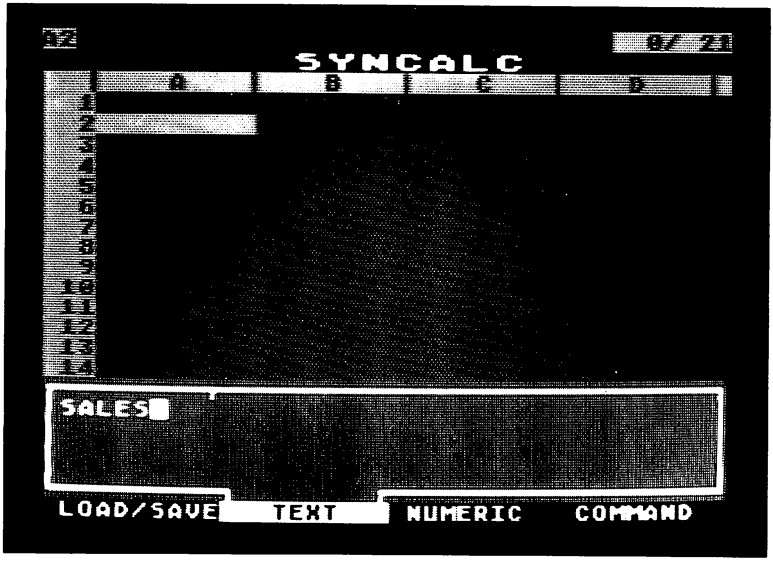
SynCalc's worksheet cursor remembers the last direction it moved. After making an entry and pressing RETURN, the worksheet cursor will automatically advance to the next cell based on the last direction. This makes the entry of columns of figures quick and easy.

Text Entry

After making sure that you have a clear worksheet, you can use CTRL and the arrow keys or direct cursor movement to position the cursor at the cell where you want to make the text entry. In this case, move to cell A2.
PRESS OPTION for the Main Menu.
Move the Cursor to TEXT with CTRL and the arrow keys:
PRESS RETURN.

You will be presented with a blue text entry window with a white border on which you can make a text entry. The first column will be a label column, so type the following heading:

SALES



If you mistype a letter, use (BACK SPACE) to back up and make your changes. The small vertical line extending down from the top of the TEXT entry window marks the last character you can enter without exceeding the current column width.
PRESS (RETURN).

The heading SALES is entered in cell A2 where the worksheet cursor was located.

If you simply type a letter from A-Z, an asterisk (*), the symbols < and >, pound sign (#), dollar sign, percent sign, ampersand (&), apostrophe, parenthesis, underline, equal sign, colon, semicolon, backward slash mark, comma, question mark, brackets, or a circumflex (^), directly onto the worksheet without first calling up the Main Menu, the TEXT entry window will appear just as if you had selected it from the Main Menu.

When you press the quotation mark (") you can call up a blank TEXT entry window. This feature was built into *SynCalc* so that you can call up the text entry window for entering addresses and other text which begin with a number. Since addresses usually begin with numbers, you would get the NUMERIC entry window if you began by entering the numbers.

Text entries can consist of any printable character, including CTRL characters. This allows you to embed printer control characters within your worksheet. (Note: To get the escape character to print, you must press SHIFT ESC.)

Editing Cell Entries

SynCalc provides full edit capabilities for all cell entries. For example, with your cursor on Cell A2,
PRESS RETURN.

You will find yourself in the text edit window with your cursor over the first "S" in SALES. Within the text edit window, you can use the standard ATARI edit functions to insert or delete characters as well as to clear the entry.

CTRL DELETE	Delete one character
CTRL INSERT	Insert one character
SHIFT CLEAR	Clear edit window
CTRL CLEAR	Clear edit window

Since we do not want to make any changes:
PRESS ESC to return to the worksheet.

Numeric Entries And Calculations

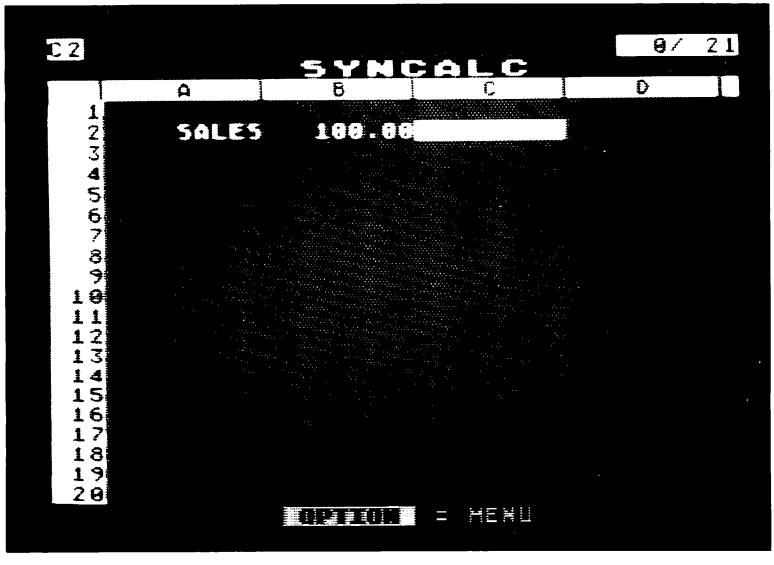
Now that the SALES row has been labeled, we will want to make a data entry for SALES.

With CTRL and the the arrow keys, move the cursor to cell B2.
PRESS OPTION for Main Menu.

With CTRL and the arrow keys move the cursor to the NUMERIC option on the Main Menu.
PRESS RETURN.

You will be presented with a green Numeric entry window with a yellow border from which you will be able to make data entries onto the worksheet and create formulas for calculating numeric values.
ENTER: 100
PRESS RETURN.

The entry window disappears and the value 100.00 is entered at cell B2 where the worksheet cursor was located representing $100 in SALES.



In a similar fashion to text entries, if you type a number (0-9), decimal point (.), math operator (+,-), or a function specifier (@), you are automatically placed in the NUMERIC entry window. If you type a "+" to bring up the NUMERIC entry window, the "+" will not appear.

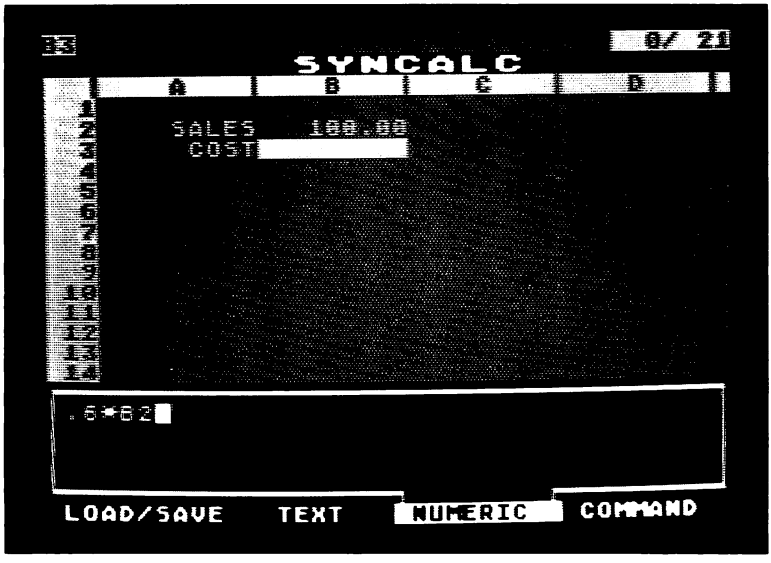
Notice that your entry, 100, is displayed as 100.00. The default numeric format is two decimal places. We'll show you how to change the format later.

Now use (CTRL) and the arrow keys to move the worksheet cursor to cell A3. We will enter another label. This time we will go directly into text mode without calling up the Main Menu. To do this simply,
ENTER: COST
PRESS (RETURN).

The label COST is now entered at cell A3.

At cell B3 we are going to place a formula for COST which will be calculated as 60% of SALES. Move the worksheet cursor to cell B3.

The symbol * is used to indicate multiplication in *SynCalc*, so the formula we want to enter will be: .6*B2. This translates as 60% of the amount at cell B2 or SALES. The advantage to writing it this way (instead of writing it .6*100) is that you can go back and change your sales figures and *SynCalc* will adjust the related calculations accordingly. This time we will go directly into numeric mode without calling up the Main Menu. To do this, simply,
ENTER: .6*B2



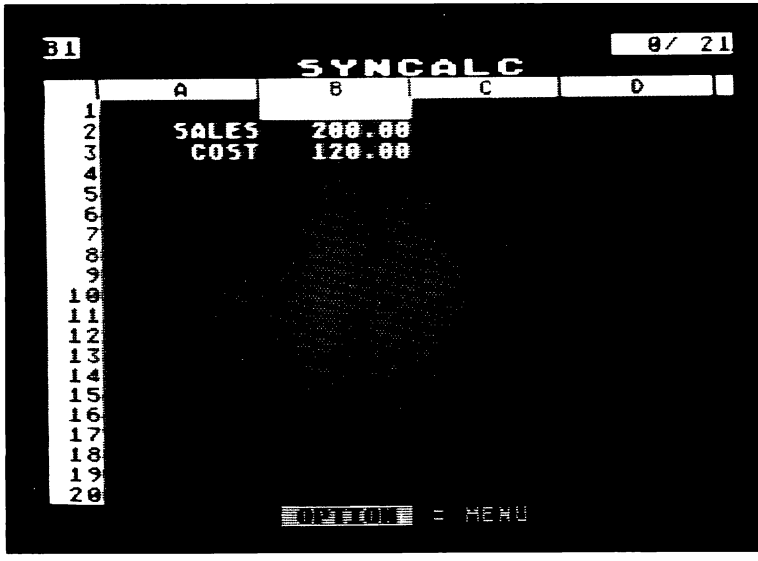
If you make a mistake in your formula entry, you can use (BACK SPACE) to correct it.
PRESS (RETURN).

The number 60.00 will appear at cell B3. Now, if you change the value at cell B2 (SALES), the value at B3 will also change since it is based on 60% of the value at cell B2.

To see an example of this, first position the worksheet cursor at cell B2 using (CTRL) and the arrow keys.

To change the value at cell B2 all you have to do is type a new value:
ENTER: 200
PRESS (RETURN).

Not only was the value 200.00 entered at cell B2, but the value at B3 was recalculated as 120.00 (.6*B2 = .6*200).



Cursor Moves In Formulas: Cell Pointing

You can write a formula for SALES minus COST without knowing that the number for SALES is at cell B2 and the number for COST is at cell B3. In fact, you don't even need to enter the cell coordinate B2 or B3. You can select cell coordinates with CTRL and the arrow keys. This type of formula entry is called "cell pointing". The following example will illustrate this feature.

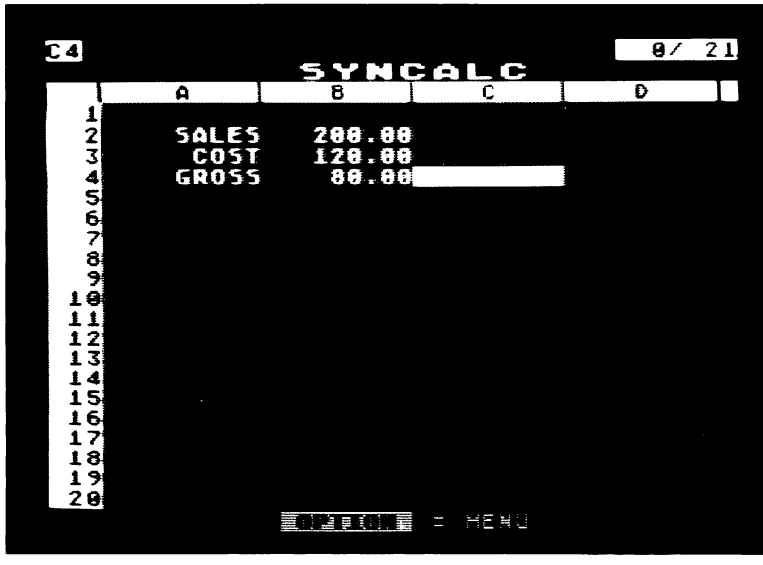
Move the worksheet cursor to cell A4 with CTRL and the arrow keys and enter the label: GROSS.
PRESS RETURN.

Now with CTRL and the arrow keys, move the cursor to cell B4.

Since, SALES minus COST equals GROSS, the formula we want for cell B4 is equivalent to B2 minus B3. To write this formula quickly, type a plus sign "+" to engage the

NUMERIC entry mode. Use (CTRL) and the arrow keys to move the worksheet cursor to cell B2. As you move the worksheet cursor to cell B2, the cell reference will appear in the NUMERIC entry window. Now, type a minus sign "-" and use (CTRL) and the arrow keys to move the worksheet cursor to cell B3. You will now have your formula "B2-B3" appearing in the NUMERIC entry window. To enter the formula, simply:
PRESS (RETURN).

The result of B2-B3 (200-120) will appear at cell B4.



It is also possible to simply type your entry directly into the NUMERIC entry window without using the arrow keys to point. However, when you begin entering more complicated calculations with many entries on your worksheet, you may find it quicker and easier to use cell pointing. For this reason, the emphasis in this manual will be on using the arrow keys to point at cells in order to create formulas.

There are two NUMERIC entry modes; cell point mode and formula edit mode. These are distinguished by the color of the edit window. We will take a moment here to discuss this feature more fully.

MODE	COLOR OF WINDOW	CHARACTERISTICS
Cell Point	**Green**	**When making numeric entries in an empty cell, CTRL and arrow keys move the worksheet cursor and cause current cell position to appear in the numeric entry window.**
Edit	**Blue**	**When editing numeric entries, CTRL and arrow keys move the edit window cursor to allow easy revision of formulas.**

The ATARI key can be used to toggle between the two modes anytime you are in either the numeric entry or edit windows.

Editing

Any previously entered label, number, or formula can be edited at any time. To do this, simply position the worksheet cursor over the cell whose entry you wish to edit and press RETURN as we did earlier with the entry SALES.

For another example, move the worksheet cursor to cell A3 and:
PRESS RETURN.

The TEXT edit window will pop up and the edit window cursor will appear over the "C" in COST. Use CTRL and

the arrow keys to move the cursor over the "S" in COST. Let's change COST to COGS, the acronym for Cost of Goods Sold.
ENTER: GS
PRESS (RETURN).

Notice that the entry at cell A3 has changed to COGS. If you place the worksheet cursor over a numeric entry and press (RETURN), you will find yourself in the NUMERIC edit window in the EDIT mode (blue window).

Congratulations on creating your first worksheet!

Saving Your Work

All this calculating power would not mean much if you could not save and later recall your worksheet and data. *SynCalc* allows you to save your work in several forms. Let's look at saving the entire worksheet first.

Saving A Worksheet

To save your worksheet to disk you will need one of the blank, formatted disks that you prepared earlier. Make sure your disk drive busy light is off and open the drive door. Insert your blank, formatted data disk into the drive and close the drive door.
PRESS (OPTION) to activate the Main Menu.

Use (CTRL) and the arrow keys to position the cursor over LOAD/SAVE and:
PRESS (RETURN).

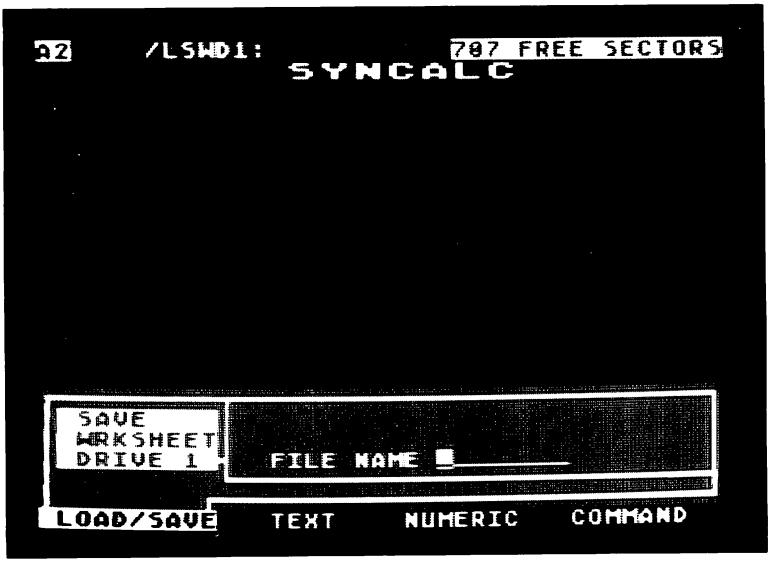
The LOAD/SAVE sub-menu will appear with the cursor over LOAD. Move the cursor to SAVE and:
PRESS (RETURN).

The sub-menu will change, allowing you to select WRKSHEET, DATA, or TEXT. The cursor should be resting over WRKSHEET, so:
PRESS (RETURN).

We will cover the DATA and TEXT format saves a little later.

You will need to select the disk drive to which you would like to save the worksheet. Simply move the cursor to the desired drive number and:
PRESS (RETURN).

Your screen should look like this:



Lastly, you must enter the file name under which the worksheet will be saved. A file name can be 1 to 8 characters in length and may consist of the letters A-Z and the numbers 0-9, but the first character must be a letter.

ENTER: SAMPLE
PRESS (RETURN).

Your drive will start up as the worksheet is saved to the disk. When the sub-menu disappears, the save process has been completed. When you tell *SynCalc* to save a worksheet, the entire workspace including data, formulas, and format options are saved. No matter where the worksheet cursor is positioned, the entire sheet is saved. *SynCalc* appends an ".SC" extender to worksheet file names. Just to prove that the worksheet was actually saved, let's load it back into memory.

Loading A Worksheet

This process performs the complementary function of saving a worksheet. Unlike the save process, the worksheet cursor position is important in loading a worksheet data file. *SynCalc* uses the current worksheet cursor position to determine the upper-left corner of the incoming worksheet. This feature allows you to load a worksheet at a location other than where it was created, providing the flexibility to load more than one worksheet into memory at once. *SynCalc* adjusts all cell references for you to take account of the new location.

Let's try an example. You just saved the worksheet under SAMPLE and the worksheet is still visible on your screen. We will load the worksheet back into memory at cell A10. This will give us two copies of the same worksheet.
PRESS (OPTION) to activate the Main Menu.

Move the cursor to LOAD/SAVE and:
PRESS (RETURN).

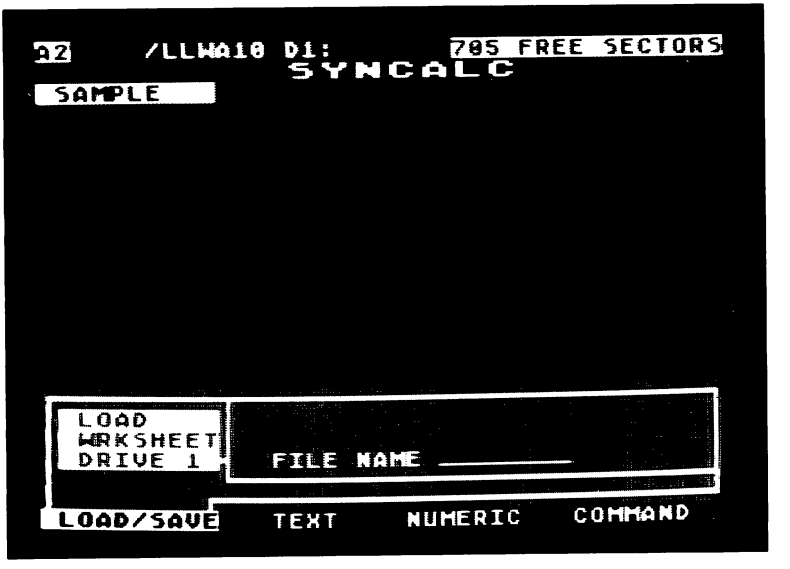
The sub-menu will appear with the cursor over LOAD.
PRESS (RETURN) to select the LOAD option.

The sub-menu will change, allowing you to select WRKSHEET or DATA with WRKSHEET as the default selection.
PRESS (RETURN) to select WRKSHEET.

Indicate the TARGET CELL as A10 and:
PRESS (RETURN).

Select the appropriate drive number using (CTRL) and the arrow keys and:
PRESS (RETURN).

The worksheet will disappear and be replaced by a listing of worksheet files.

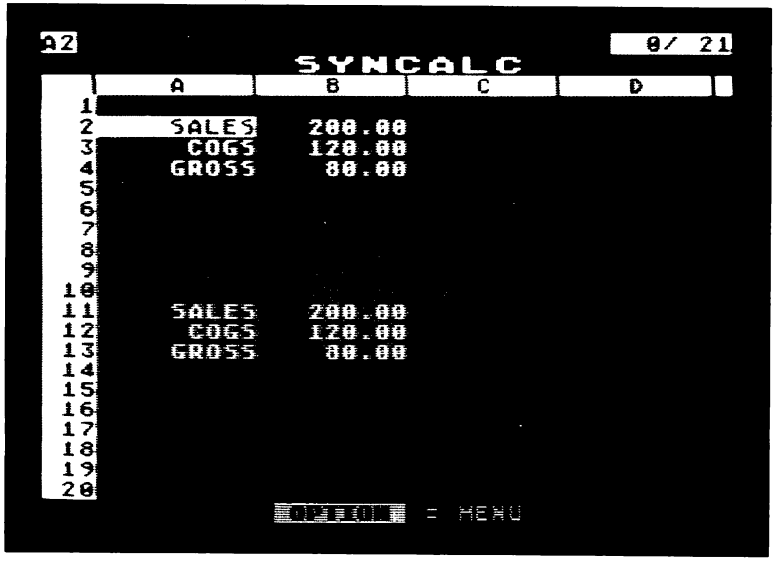


You may have noticed some additional information on the top line of your screen. From left to right, the first entry is the current cell position. The next set of characters beginning with "/" is the expert user command which corresponds to your menu selections. We'll look at these

commands later. Lastly, on the far right of this line is the amount of remaining space on your data disk.

At this point, you can select a file to load in one of two manners. First you may simply type in the file name from the keyboard. Secondly, you can point to the file you want using (CTRL) and the arrow keys and pressing (RETURN). Since we only have one file:
PRESS (RETURN) to select SAMPLE.

Your disk drive will start up as the worksheet is loaded. When the load process is finished, you will be returned to the worksheet. Your screen should look something like this:

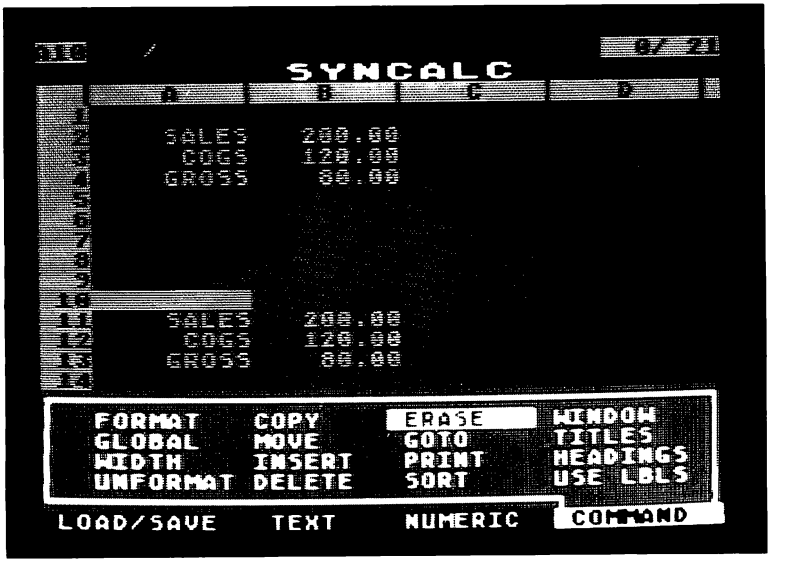


Notice that the label SALES appears in cell A11 even though we loaded the worksheet at cell A10. This is because the original sheet had a blank first row (row 1) and it was loaded into the first designated row (row 10).

We won't need this extra copy of the worksheet at A10 so let's erase it. Position the cursor at cell A10.
PRESS (OPTION) to activate the Main Menu.

Move the cursor to COMMAND and:
PRESS (RETURN).

You will immediately see the Command sub-menu. Move the cursor to ERASE.



PRESS (RETURN) to select the ERASE command.

The sub-menu area will change, prompting you for a cell range to erase. Simply:
PRESS (RETURN).

This will select cell A10 as the upper-left cell. Next, move the worksheet cursor using (CTRL) and the arrow keys until it rests on cell B13. As you move the cursor, the corresponding cell address appears in the sub-menu area.

When you've specified the cell range A10 to B13,
PRESS (RETURN).

The cell block is instantly erased.

Safeguarding Your Work

SynCalc will save you hours of time with its convenient operation and easy to use calculating features. At times, the information you are working on will be very important to you and the time you have spent reaching your calculations irreplaceable. To guard against such things as power failures, which could cause you to lose all of your work, learn to periodically save your worksheets as you go. This could save you hours of time that would otherwise be spent reentering and recalculating your lost data.

As you work, think of how long it has been since you last saved the sheet. If you have spent more time than you would wish to lose if something went wrong, or if you have new results which might be difficult to reconstruct, then it's time to save the sheet again.

To keep track of several versions of the same information on diskette, you can append a sequential number to the file name you use when you save the sheet. SALES1 can become SALES2, so that you will have both files to look at and compare.

Making Backup Copies Of Diskettes

Saving your work periodically on diskette is only the first step in protecting your time and calculations. A diskette is a safe and reliable medium for storing information. However, a diskette can be harmed even in ordinary use. It could be scratched or it may pick up grease or dust. It may be damaged by heat, exposure to a magnetic field or

accidentally be re-formatted, thus erasing its contents. Diskettes will eventually wear out. The average lifetime of a diskette is about 40 hours of use (when the disk drive BUSY light is on, the diskette is in use.) To protect yourself, you should always make extra copies of your important files on separate backup diskettes.

You can copy diskettes in two ways. First, you can LOAD the contents of a disk file into memory and then SAVE it onto a second formatted disk using the commands on the LOAD/SAVE sub-menu.

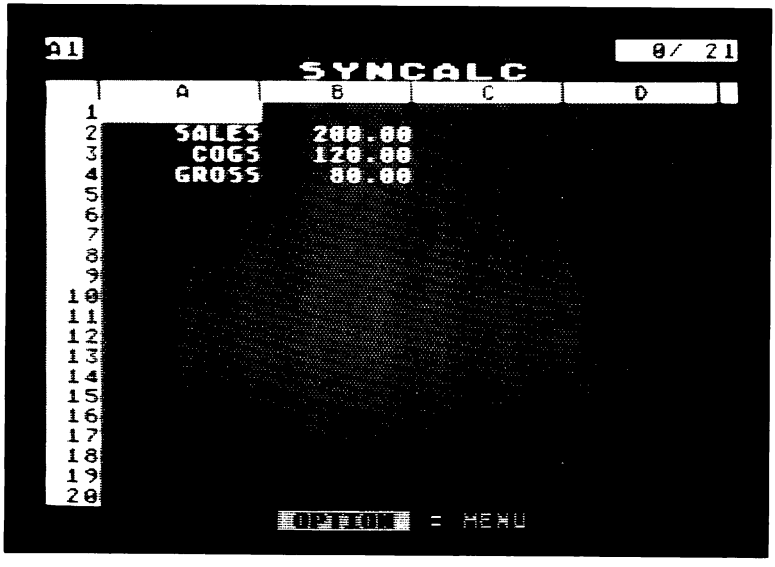
Second, you can use the copy file or duplicate file options of ATARI DOS II. Read the ATARI DOS II manual carefully and follow the directions on the duplication procedure.

Lesson Two

This lesson will expand upon the basic principles covered in the example created in Lesson One. If you have just finished with Lesson One and still have your worksheet on your screen display, you may begin with the section Copying A Formula. If this is a new session, you will need to load your SAMPLE disk file into your computer's memory after loading *SynCalc*. The instructions for loading *SynCalc* are in Section One under Loading The Program. Then follow the previous instructions for Loading A Worksheet, using cell A1 as the upper-left corner instead of A10. If you did not save the example from Lesson One, it is not difficult to re-enter it. Check back through Lesson One to re-enter the data before commencing with Copying A Formula.

Copying A Formula

If your cursor is not at cell A1, move it to cell A1 using (CTRL) and the arrow keys. Your screen should look like this:

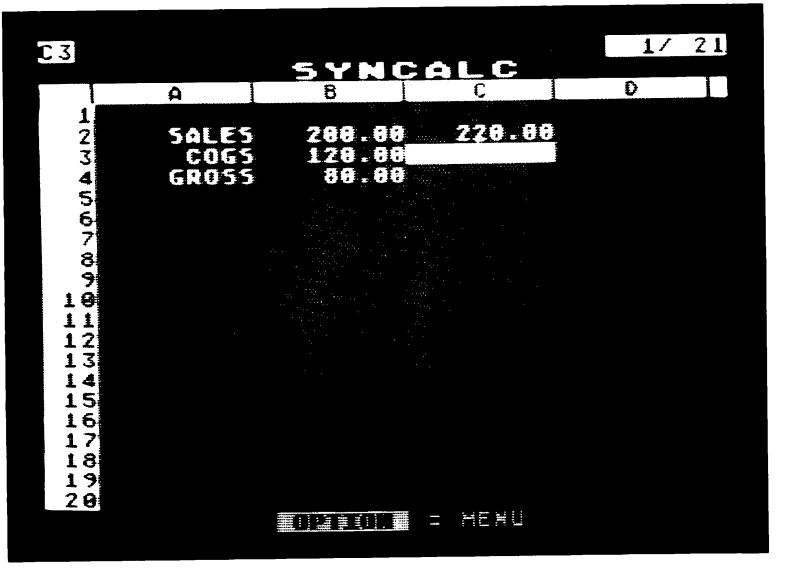


Our worksheet so far reflects figures for Sales, Cost of Goods and Gross Margin for a given period such as a year, month or week. In this example, we will assume these figures are for a month and will now project a 10 percent monthly increase in Sales out for 12 months by using the COPY option on the COMMAND Menu. The first step in this process, however, is to create the formula that is going to be copied. A formula to reflect a 10 percent increase in Sales would be written as: 1.1*B2. The figure at cell B2 is the entry for Sales. Sales is multiplied by 1.1 which is equal to multiplying by 110% to reflect a 10 percent increase. To do this, position the worksheet cursor at cell C2 (this is where we want the formula to be entered initially), and, make your formula entry as follows:

ENTER: +1.1*
PRESS (CTRL) and the arrow keys to position the cursor at cell B2.

The NUMERIC entry window should now contain your formula: 1.1*B2
PRESS (RETURN) to enter the formula at C2.

The figure 220.00 is now entered at cell C2 reflecting a 10 percent increase on 200.



Relative Cell Address

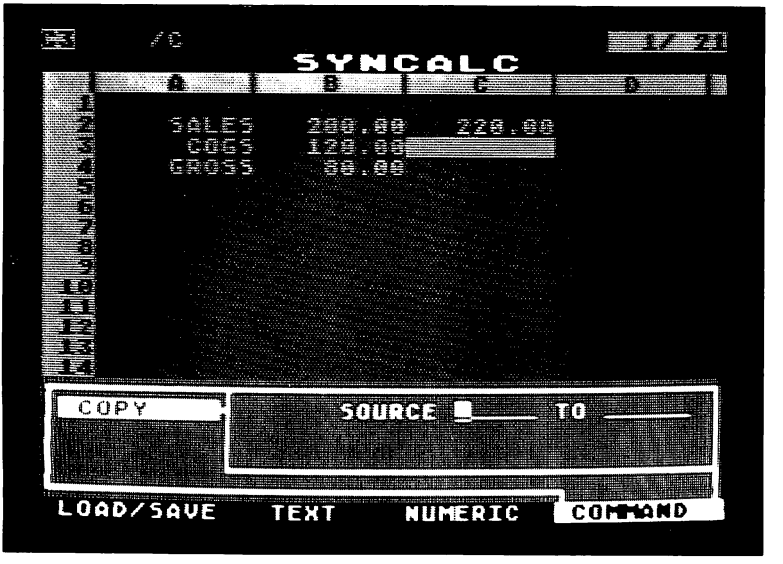
We want to now copy this formula out 10 times beginning at cell D2 and ending at M2. This will give us a 12 month projection for Sales based on a monthly 10% increase. Cell C2 reflects a 10% increase in Sales from the figure at cell B2. Cell D2 will reflect a 10% increase in the Sales

figure from cell C2. Cell E2 will reflect a 10% increase in the Sales figure from cell D2, and so on. This is known as a Relative Cell Address where each subsequent value is relative to the values calculated before it.

This brings us to the reason we had you "point" to cell B2 to make the entry for the formula (1.1*B2) earlier. Actually, you could have typed in B2 instead of pointing to it, but pointing to it helps to give you an understanding of the positional relationships of the cell. *SynCalc* does not remember the formula as B2 times 1.1, but remembers it as the value one cell to the left of itself times 1.1. The advantage to representing formulas in this way is that you can use the very same formula at different locations in the worksheet to add, subtract, multiply or divide different columns and rows of numbers. In practice, you enter the formula once and use the COPY command to copy it to other cells.

We are ready now to copy the formula created in cell C2 (1.1*B2) across our worksheet in 10 cells. To do this,
PRESS (OPTION) for Main Menu.
Use (CTRL) (→) to select COMMAND
PRESS (RETURN).
Use (CTRL) and the arrow keys to select COPY:
PRESS (RETURN).

The COPY sub-menu comes up on the display screen:



You are being prompted to specify the cell range containing the formulas you want copied. When you make your SOURCE entries and press (RETURN) a DESTINATION line will appear. The DESTINATION cell range is where you want the formulas copied to. You have three options for copying formulas:

1. You can copy the formula in one cell to a range of cells, either a row or a column.
2. You can copy the formulas in one column or section of a column across the worksheet to a range of columns.
3. You can copy one row or section of a row to a range of rows.

The first option, copying a formula at one cell to a range of cells is what we are going to do here in this example.

In the blank opposite SOURCE, hold (CTRL) down and

use the arrow keys to point to C2. Cell C2 is where the formula 1.1*B2 is located.
PRESS (RETURN) to enter C2 as the beginning SOURCE cell.

The cursor will jump over to the second blank on the SOURCE range line. Since we are only copying one formula and not a range of formulas.
PRESS (RETURN) again to enter C2 as the ending SOURCE cell.

The cursor is now on the DESTINATION range line. In our example, this refers to the 10 cell positions (D2 to M2) where we want to copy the formula giving us the 12 month sales projection.

In the blank opposite DESTINATION, use (CTRL) and the arrow keys to point to D2:
PRESS (RETURN).
Use (CTRL) and the arrow keys to point to M2:
PRESS (RETURN).

The SALES values have been calculated across Row 2 from cell D2 to to cell M2 with each successive value being 10% greater than the value before it. Use (CTRL) and the arrow keys to scroll your screen to view the entries in cells D2-M2.

Absolute Cell Address

There are situations in which you will want *SynCalc* to copy the formulas in an absolute rather than a relative way. That is, you will want part of your original formula to remain the same as it is copied. As an example, we will calculate the monthly SALES as a percentage of the TOTAL annual sales.

To do this, we need to create a label and a formula for the annual total. Move the worksheet cursor to cell N1 and:
ENTER: TOTAL
PRESS (RETURN).

Now to create the formula, position the worksheet cursor at cell N2. Since the annual total is the sum of the twelve monthly figures, we could enter a long formula showing the addition of twelve cells:

B2 + C2 + D2 + E2 + F2 + G2 + H2 + I2 + J2 + K2 + L2 + M2

However, *SynCalc* has a built-in SUM function which makes this much easier.
ENTER: @SUM(B2:M2)
PRESS (RETURN).

SynCalc sums up the values in cells B2 through M2 and places the result (4276.86) in cell N2.

Now we are ready to create a label and formula to calculate the monthly sales as a percentage of the TOTAL annual sales.

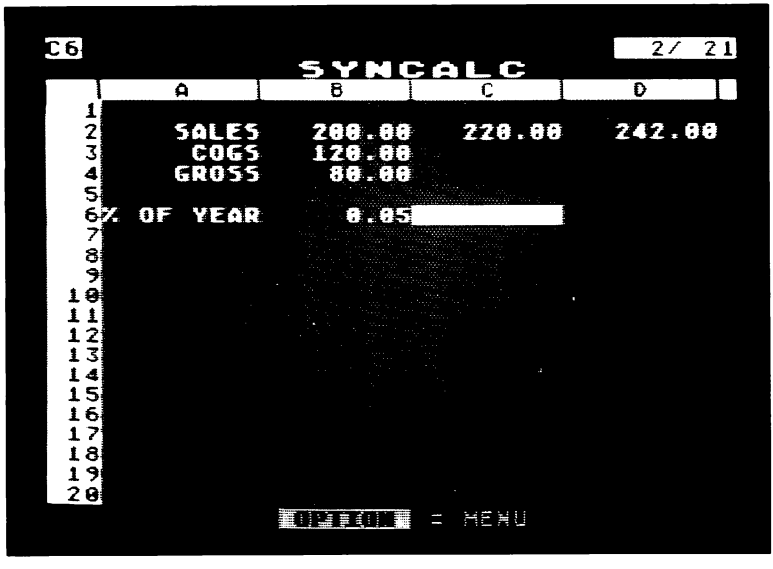
With (CTRL) and the arrow keys (or the GOTO command) move the cursor to cell A6.
ENTER: % OF YEAR
PRESS (RETURN).

The label "% OF YEAR" is now entered at cell A6.

At cell B6 we will create a formula to calculate the monthly percentage. This will be an absolute rather than a relative value because we want the yearly total at cell N2 to remain a constant in the copied formulas.

Move the worksheet cursor with CTRL and the arrow keys to cell B6. To distinguish an absolute cell reference from a relative one, square brackets [ ] are placed around the cell(s) that is to be considered an absolute reference.

The formula for this calculation will be B2/[N2]. This means that the value at cell B2 will be divided by the value at N2. Since the value at N2 was placed in brackets, it will not change if the formula is copied. The value at B2 was not placed in brackets and is, therefore, a relative value. It will then reflect the changing monthly sales figures that were discussed in the previous example.
ENTER: +B2/[N2] (don't forget the brackets)
PRESS RETURN.



The next step is to use the COPY command to have the formula repeated across the page for 10 months. Move the cursor with CTRL and the arrow keys to cell B6 on the worksheet.

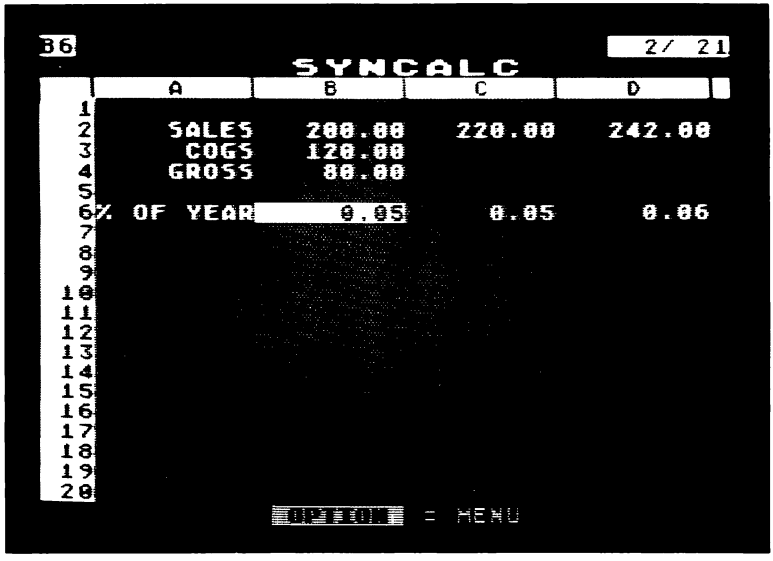
PRESS (OPTION) for Main Menu.
Use (CTRL) and the arrow keys to move the cursor to COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select COPY and:
PRESS (RETURN).

You will once again see the Copy sub-menu with the cursor positioned next to SOURCE range. The SOURCE range in this example is B6, which is where the formula we want to copy is located. You can make the entries for SOURCE and DESTINATION range by either typing in the cell address or using (CTRL) and the arrow keys to point.
ENTER: B6
PRESS (RETURN).

This will select B6 as the beginning of the SOURCE range.

Since there is only one cell in the SOURCE range and the cursor is already positioned at cell B6:
PRESS (RETURN) again.

The DESTINATION range for this example will be C6 to M6, so that the percentages will be repeated across the page for 12 months with cell B6 representing January and cell M6 representing December.
ENTER: C6 for the start of the DESTINATION range.
PRESS (RETURN).
ENTER: M6 for the end of the DESTINATION range.
PRESS (RETURN).



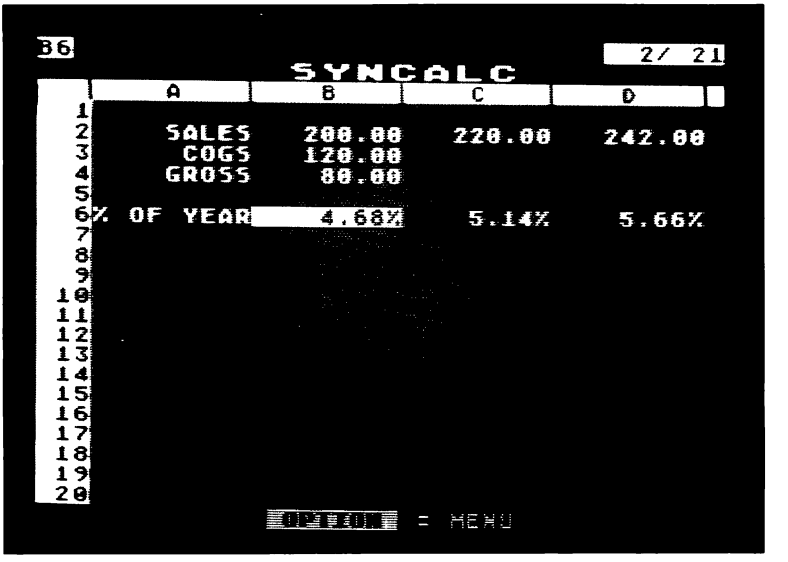
Watch your worksheet. The percentage values for each month have been copied across the page giving you the monthly SALES as a percent of the TOTAL sales. Use CTRL and the arrow keys to scroll across and look at the figures.

Percent Signs

The numbers appearing in row 6 are decimal numbers. Since our label calls for a percentage, we will format row 6 to show percentages. To do this:
PRESS OPTION.
Use CTRL and the arrow keys to select COMMAND and:
PRESS RETURN.
The cursor should be positioned over FORMAT, so:
PRESS RETURN.
Use CTRL and the arrow keys to select PERCENT and:
PRESS RETURN.
ENTER: B6 for the start of the RANGE.
PRESS RETURN.

ENTER: M6 for the end of the RANGE.
PRESS (RETURN).

Your figures in row 6 are now represented as percentages.



Copying a Range of Cells

To make our worksheet complete, we will copy the Cost Of Goods Sold formula and the Gross Profit formula across the worksheet for the full year.

Move the cursor back to cell B3.
PRESS (OPTION) for the Main Menu.
Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select COPY and:
PRESS (RETURN).

The COPY sub-menu is now on your screen. We will use it to copy the formula range Cost Of Goods Sold (B3) and Gross Profit (B4) across rows 3 and 4. *SynCalc* will copy both formulas simultaneously across the page.
ENTER: B3 for the start of the SOURCE range and:
PRESS (RETURN).
ENTER: B4 for the end of the SOURCE Range and:
PRESS (RETURN).

We must now specify the columns which we want these formulas copied to. To do this,
ENTER: C3 for the start of the DESTINATION Range.
PRESS (RETURN).
ENTER: M3 for the end of the DESTINATION Range.
PRESS (RETURN).

Watch your worksheet. *SynCalc* is copying the formula at B3 (.6*B2) across the worksheet to the range of cells C3 to M3 and is also copying the formula at B4 (B2-B3) across the worksheet to the range of cells C4 to M4. Notice that you did not need to go into the COPY sub-menu to specify the range C4 to M4. *SynCalc* took care of that for you when you specified the SOURCE range of B3 to B4.

Your completed worksheet will appear as follows:

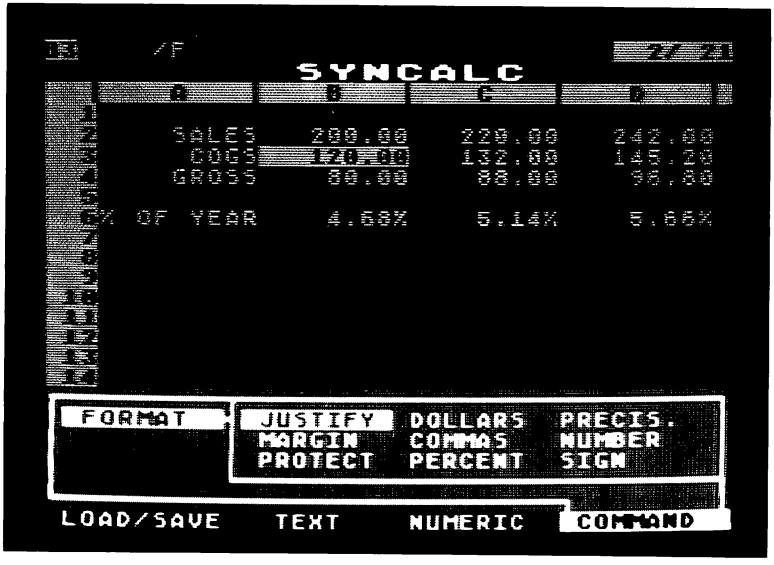
	A	B	C	D	E	F	G	H
1								
2	SALES	200.00	220.00	242.00	266.20	292.82	322.10	354.31
3	COGS	120.00	132.00	145.20	159.72	175.69	193.26	212.59
4	GROSS	80.00	88.00	96.80	106.48	117.13	128.84	141.72
5								
6	% OF YEAR	4.68%	5.14%	5.66%	6.22%	6.85%	7.53%	8.28%

I	J	K	L	M	N TOTAL
389.74	428.72	471.59	518.75	570.62	4276.86
233.85	257.23	282.95	311.25	342.37	
155.90	171.49	188.64	207.50	228.25	
9.11%	10.02%	11.03%	12.13%	13.34%	

Formatting The Screen Display

As we saw when we formatted our worksheet above for percents, *SynCalc* has a formatting sub-menu on the COMMAND option of the Main Menu. This feature will allow you to format your worksheet according to your specifications. The FORMAT sub-menu has nine options to choose from. To take a look at them,
PRESS (OPTION) for Main Menu.

Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).
PRESS (RETURN) to select FORMAT.



The FORMAT sub-menu is now on your screen display. The following discussion will briefly describe the nine options and how they can be used.

You select from the formatting options with CTRL and the arrow keys, and RETURN. You can format a single cell, or a block of cells. To indicate a block of cells, the first cell reference refers to the upper-left cell and the second cell reference refers to the lower-right cell. As in the numeric entry and edit windows, you can use CTRL and the arrow keys to point to the cells you wish to designate as your cell block.

Justify

Cell entries can be left or right justified, or centered. If you have set a margin (explained later), justification is performed to the designated margin. If you change a column width, *SynCalc* will automatically adjust the display as necessary.

Margin

This option allows you to establish reserved blank spaces either to the right or left of your data depending on justification. You might want to use this to keep sufficient space between columns of data in your worksheet. This value depends upon the width of the columns.

Protect

SynCalc allows you to protect cells from certain operations. You may choose to protect the cells' VALUE from re-calculations, thereby freezing the cells' current value. Or you may choose to protect a cell from ENTRY. This prevents any entry from replacing the current one.

Dollars

Displays a leading "$" and does not affect the number of characters to the right of the decimal point.

Commas

Inserts commas every three digits to the left of the decimal point to make reading large numbers easier. Hence 1000000 would be displayed as 1,000,000.

Percent

Multiplies the data by 100 and displays a trailing % symbol.

Precision (Precis.)

Specifies the number of digits to the right of the decimal place to be displayed (0-10).

Number

Choose from scientific, engineering, floating, or fixed number types.

Fixed: Interprets the precision value as the number of significant figures to the right of the decimal point. This is the default format. 1.2345678 with a precision of 4 would display as 1.2346.

Scientific: Sets the number of significant figures to the current precision value and displays in exponential notation. For example, with precision set to 2, 1.2345678 will be displayed as 1.2+00. The minimum precision is 2.

Floating: Sets the total significant figures to the current precision value. 1.2345678 with a precision of 4 would display as 1.235.

Engineering: Sets the number of significant figures to the current precision value and displays in exponential notation. The minimum precision used is 4. Hence, 1.2345678 would display as 1.235+00 if the precision was set to 4 or less.

Sign

Sets the manner in which negative numbers will be presented.

Minus: Display leading minus sign: -1000

Paren: Bracket with parentheses (1000)

DR/CR: Display with trailing debit or credit symbol:
1000CR

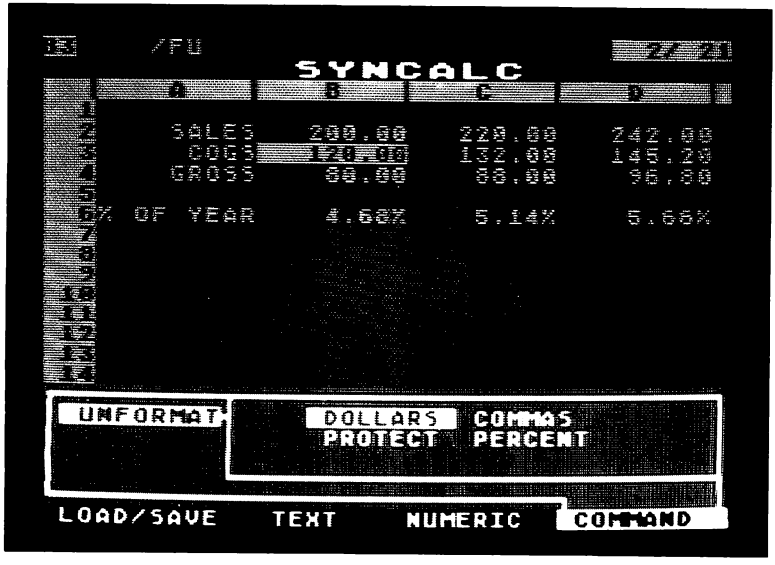
PRESS (ESC) to return to the worksheet.

Unformatting The Screen Display

SynCalc has an Unformatting Command which will allow you to undo format options. The Unformat sub-menu has four options to choose from. They are Dollars, Commas, Protect and Percent. To take a look at them:
PRESS (OPTION) for Main Menu.

Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select UNFORMAT and:
PRESS (RETURN).

You select from the UNFORMAT options with (CTRL) and the arrow keys and pressing (RETURN). A selection screen then appears asking you to indicate which cells are going to be affected by the unformat option you selected. As with formatting, you can unformat a single cell or a block or cells. The first cell reference is for the upper-left cell and the second reference is the lower-right cell. You can use (CTRL) and the arrow keys to point to the cells affected.



Dollars

Removes the leading "$".

Commas

Removes commas from large numbers over three digits.

Protect

Any cells that were protected from recalculation or entry will become subject to recalculation and entry.

Percent

Removes the trailing percent sign and divides the number by 100.

These format and unformat options provide tremendous flexibility in creating a worksheet that is easy to read. As

we progress through our examples, we will use some of these formats to familiarize you with their operation.

For now, let's examine some of the other commands which affect the way your worksheet is displayed.

PRESS [ESC] to return to the worksheet.

Fixing Titles In Place

Place the cursor at cell N1 with Direct Cursor Movement (GOTO command) or with [CTRL] and the arrow keys. The titles SALES, COGS, GROSS and % OF YEAR have scrolled off the screen. If you were preparing a more complex income projection containing many rows of numbers for selling and administrative costs, taxes and so on, it would be difficult to remember what each row of figures represented once the titles scrolled off the screen. With *SynCalc* it is possible to fix the titles in place while the worksheet scrolls behind them. For example:

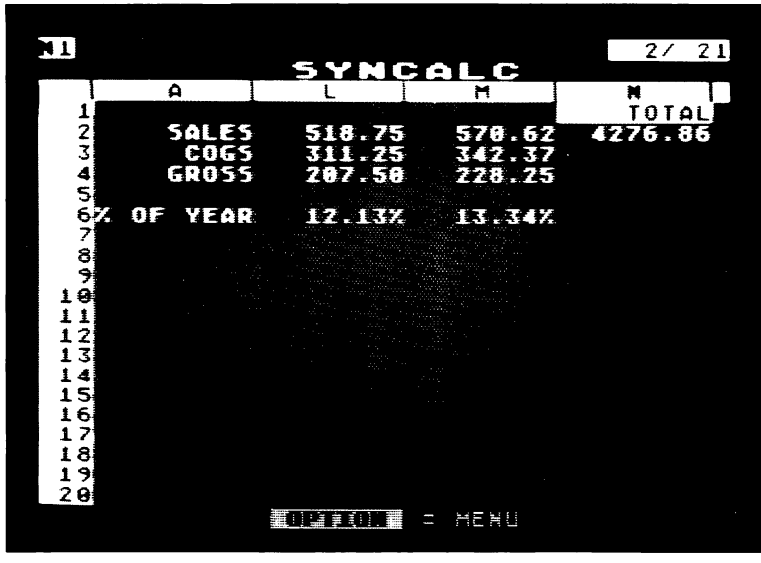
Move the cursor with [CTRL] and the arrow keys (or the GOTO command) back to cell A1 and:
PRESS [OPTION] for Main Menu.
Use [CTRL] and the arrow keys to select COMMAND and:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select TITLES and:
PRESS [RETURN].

The TITLES sub-menu appears and allows you to choose to fix vertically, horizontally, both vertical and horizontal or to cancel fixed titles. Select VERTICAL with [CTRL] and the arrow keys, and:
PRESS [RETURN].

The next screen allows you to position the cursor. Position the cursor at cell B1 and:
PRESS (RETURN).

Now use (CTRL) (→) to scroll the window to the right and watch the screen. Column A will remain in place while the rest of the sheet scrolls by.

NOTE: When fixing titles in place, place the cursor to the right of the column and below the row you want to fix. That is, to fix Column A, place the cursor in column B. To fix row 1, place the cursor in row 2.



Press (CTRL) (←) until the window scrolls back to its beginning position. Keep scrolling until you hear the "Beep" to alert you to the fact that you are bumping into Column A.

You can use Direct Cursor Movement to view different sections of the worksheet. Column A will remain in view.

You may find yourself looking at two column A's. This allows you to change entries in column A even though the titles are fixed.

This feature is deactivated by going back into the TITLES sub-menu and selecting: CANCEL.
PRESS [OPTION] for Main Menu.
Use [CTRL] and the arrow keys to select COMMAND:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select TITLES:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select CANCEL:
PRESS [RETURN].

The same principle and procedure works for fixing titles horizontally, or both horizontally and vertically.

Adjusting Column Widths

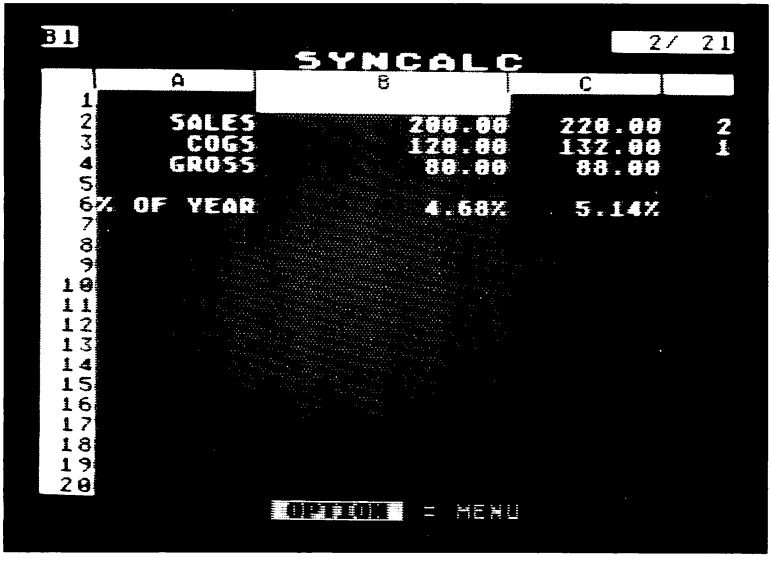
The widths of selected columns can be set individually. For example, let's reset the width of column B to 15. Position the worksheet cursor in column B.
PRESS [OPTION] to activate the Main Menu.
Use [CTRL] and the arrow keys to select COMMAND and:
PRESS [RETURN] for the COMMAND sub-menu.
Use [CTRL] and the arrow keys to select WIDTH and:
PRESS [RETURN].

You will then be prompted to enter a value for the column width. Column widths can be 1 to 36 characters.
ENTER: 15
PRESS [RETURN].

You must now specify the columns to be re-sized. You may specify this range either by direct keyboard entry or by simply moving the cursor to any cell in the desired

column(s) and pressing (RETURN). Since the cursor is already positioned where we want it:
PRESS (RETURN) twice.

Your screen should look something like this:



There are bound to be times when the information in your columns varies in width. Often, title columns are wider than statistical columns. In order to save space and neatly format your worksheet, you can increase or decrease the width of separate columns one at a time. The default column width is 9 characters.

Splitting The Screen

SynCalc has a WINDOW command on the Command Menu that allows you to split the screen so that you have two windows. Each window can be scrolled independently to view any portion of the worksheet. You can jump the cursor from one window to the other using (SELECT).

For example, let's create a vertical window at Column C. First make sure your worksheet is fully scrolled to the left, with Column A visible. Next move the cursor to Column C. It does not matter what row you are in when you create a vertical window.
PRESS (OPTION) for the Main Menu.
Move the cursor to COMMAND and:
PRESS (RETURN).
Move the cursor to WINDOW and:
PRESS (RETURN).

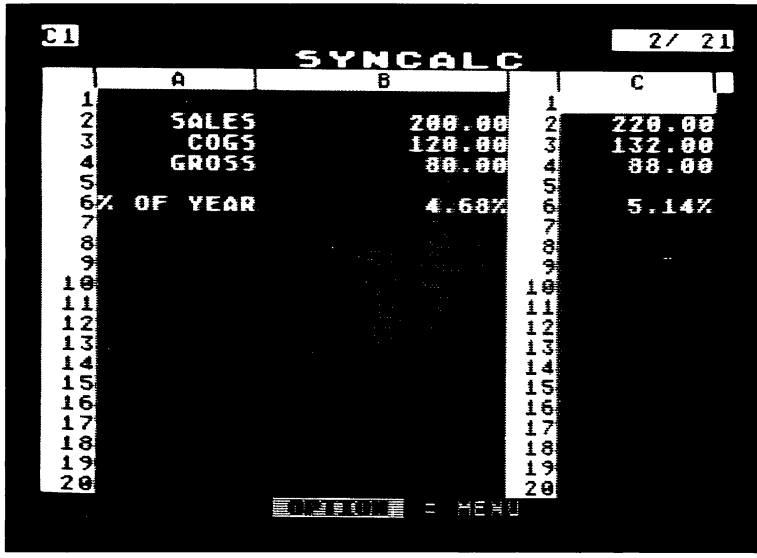
You will then be asked to select SINGLE, VERTICAL, or HORIZONTAL. This selects the direction in which the screen will be split.

Move the cursor to Vertical and:
PRESS (RETURN).

You must next specify if the two windows are to move in unison (synched), or independently (unsynched). Select SYNCHED and:
PRESS (RETURN).

Lastly, you are allowed to position the cursor. Since we are already in the desired column, simply:
PRESS (RETURN).

Your screen should look similar to this:



Pressing (SELECT) will jump the cursor back and forth between the two windows. If you choose to edit an entry or make a new one, the selected window will be enlarged to fill the entire screen while you work. Upon entering the new information on the sheet, the windows will be restored.

Experiment with scrolling up and down the worksheet. Notice that both windows move in a synchronized manner. Had we selected independent windows (INDEPEN.), only the window containing the cursor would scroll. Selecting a SINGLE window will restore the original display.

Recalculation

From our initial entry of 200 for SALES, we have been able to make a series of calculations with the COPY command. This is because the formulas we have used so far have all been related to the entry of 200 for SALES. The formula for COGS at cell B3 is .6*B2, the formula for

% of Sales at B6 is B2/[N2], Cost Of Goods Sold (COGS) at C3 depends on the value at C2 and so on.

As you can see, a change to the initial SALES figure at B2 will affect every other number on the sheet. To see how this works, place the worksheet cursor at cell B2 and,
PRESS (OPTION) for Main Menu.
Use (CTRL) and the arrow keys to select NUMERIC and:
PRESS (RETURN).

In the NUMERIC edit window:
ENTER: 347.84
PRESS (RETURN).

Watch the changes ripple across your spreadsheet on the screen. Scroll the screen window to the right to view M2, the ending month's sales, and N2 the TOTAL.

If you should ever need to invoke a recalculation, pressing (START) will perform this function.

Text Overflow

The default mode for text entry is OVERFLOW mode. If you type more characters than can be displayed in the cell, *SynCalc* will automatically overflow the remaining text into the adjacent cells. This makes the entry of long titles and headings easy. There is a command to prevent text overflow into adjacent cells. See the explanation of TEXT MODE under Global Commands later in this manual.

For example, position the cursor in cell A1.
ENTER: THIS IS MY FIRST ELECTRONIC WORKSHEET CREATED WITH SYNCALC
PRESS (RETURN).

Notice that the entry extends across the screen. Go ahead and scroll the worksheet to see for yourself that the entry is all there.

Lesson Three

Creating A Household Budget

The first two lessons have given you a basic understanding of some of *SynCalc*'s many capabilities. These basics can now be combined to show the power of *SynCalc*'s concepts and features. In this lesson we are going to set up a household budget.

To clear the worksheet:
PRESS (OPTION) for the Main Menu.

Move the cursor to COMMAND and:
PRESS (RETURN) for the Command sub-menu.

Move the cursor to GLOBAL, since we want to erase the whole sheet, and:
PRESS (RETURN).

Move the cursor to ERASE and:
PRESS (RETURN).

You will be prompted to press (START) to proceed. *SynCalc* wants you to think twice about erasing your entire worksheet. Pressing any key except (START) will cancel the operation.

Since we want a clear worksheet:
PRESS (START).

You'll be presented with a fresh, clear worksheet. All columns are restored to their default width of 9 characters and the cursor is returned to cell A1.

Following is an example of how your household budget worksheet is going to look when it is finished. We will take you through the creation of the worksheet step by step, adding the various features in their proper sequence.

	A	B	C	D	E
1					
2					
3					ACTUAL
4	EXPENSE	BUDGET	ACTUAL	VARIANCE	% TOTAL
5					
6					
7	MORTGAGE	$832.00	$832.00	$0.00	43.41%
8	INSURANCE	$95.00	$95.00	$0.00	4.96%
9	GAS	$50.00	$56.89	$6.89	2.97%
10	ELECTRIC	$20.00	$25.81	$5.81	1.35%
11	WATER	$10.00	$8.88	-$1.12	0.46%
12	PHONE	$11.00	$13.46	$2.46	0.70%
13	CAR PMT	$202.30	$202.30	$0.00	10.56%
14	FURNITURE	$40.00	$123.84	$83.84	6.46%
15	CLOTHING	$120.00	$88.04	-$31.96	4.59%
16	FOOD	$400.00	$379.66	-$20.34	19.81%
17	ENTERTAIN	$50.00	$34.90	-$15.10	1.82%
18	MISC.	$35.00	$55.81	$20.81	2.91%
19					
20	TOTAL	$1,865.30	$1,916.59	$51.29	100.00%
21					

This household budget shows the monthly expenses as budgeted (Columns A & B), the actual expenses at the end of the month (Column C), and the variance (Column D). Column E shows what percent each expense is of the total budget. For example, mortgage payments are 43.41% of the entire budget, entertainment is 1.82% of the entire budget, etc. The totals appear at the bottom of the worksheet with dollar signs, decimal points, and commas in Columns B, C, and D. Column E is total percent and therefore equals 100% with percent signs shown all the

way down the column. These formatting features will be discussed fully in their proper sequence in this section.

The first step to setting up the worksheet is placing labels across the top of the page. Make sure your cursor is positioned at cell A4. (Either use CTRL and the arrow keys or the GOTO command to accomplish this.)

Column Headings

ENTER: EXPENSE
PRESS RETURN to enter the label at cell A4.

Move the worksheet cursor over to cell B4.
ENTER: BUDGET
PRESS RETURN.

Move the worksheet cursor to cell C4.
ENTER: ACTUAL
PRESS RETURN.

Move the worksheet cursor to cell D4.
ENTER: VARIANCE
PRESS RETURN.

Move the worksheet cursor to cell E3.
ENTER: ACTUAL
PRESS RETURN.

Move the worksheet cursor to cell E4.
ENTER: % TOTAL
PRESS RETURN.

Underlines Across The Page

Now that the column labels are positioned on the screen, we can go back and underline them. Position the cursor at

cell A5. Now enter a quote mark (") to engage the text entry mode, then,

ENTER: – – – – – – – – with the minus (–) key 8 times.
PRESS [RETURN].

NOTE: Since the default value for column widths is 9 characters, you should enter 8 minus signs so that there will be one space between the underlines separating the five columns.

Watch your screen. The series of minus signs has just made a line under EXPENSE. Now we can copy this line at cell A5 to cells B5, C5, D5, and E5, so that each column heading is underlined.
PRESS [OPTION] for Main Menu.
Use [CTRL] and the arrow keys to select COMMAND and:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select COPY and:
PRESS [RETURN].

The COPY sub-menu will appear and you need to enter SOURCE and DESTINATION ranges.
ENTER: A5 for the start of the SOURCE range using the cell pointing method.
PRESS [RETURN] twice to enter it also as the end of the SOURCE range.
ENTER: B5 for start of the DESTINATION range.
PRESS [RETURN].
ENTER: E5 for the end of the DESTINATION range.
PRESS [RETURN].

The underlines are now across the worksheet one line below the column headings and separated with one space between them.

Labeling The Rows

The next step is to label each row with a budget item. Position the worksheet cursor at cell A7, and:
ENTER: MORTGAGE
PRESS (RETURN).

Now move the worksheet cursor down to cell A8.
ENTER: INSURANCE.
PRESS (RETURN).

ENTER: GAS in cell A9.
PRESS (RETURN).

ENTER: ELECTRIC in cell A10.
PRESS (RETURN).

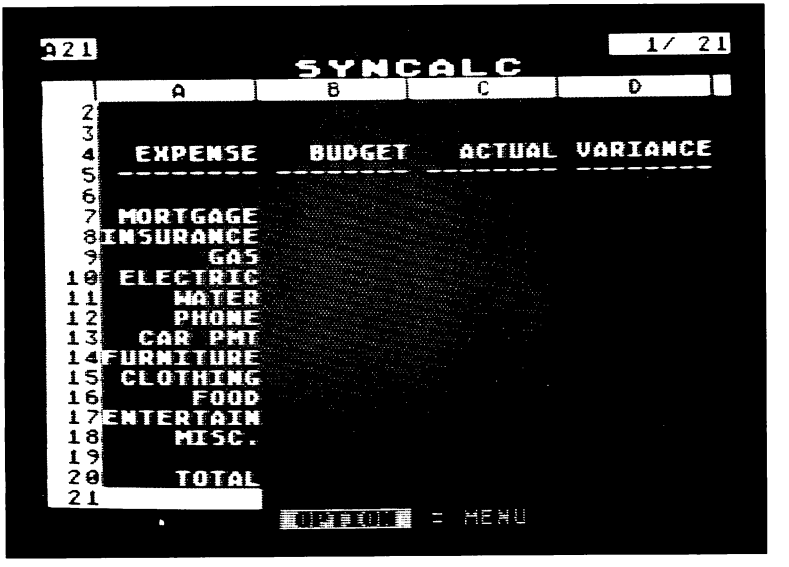
ENTER: WATER in cell A11.
PRESS (RETURN).

You should be getting pretty good at text entry by now. Go ahead and continue text entry down the rest of the page by entering:

PHONE at cell A12.
CAR PMT at cell A13.
FURNITURE at cell A14.
CLOTHING at cell A15.
FOOD at cell A16.
ENTERTAIN at cell A17.
MISC. at cell A18.
TOTAL at cell A20.

Notice that we skipped row 19. This will separate the totals from the column items giving the worksheet a neat

appearance. Your worksheet should now look something like the following:



Entering Data

The last data entries we need to make are into Columns B and C. Here you will enter your budgeted amounts and the actual expenditures for the month in question. This is done in much the same way as the text entries above, except that we will be entering numeric data instead of text.

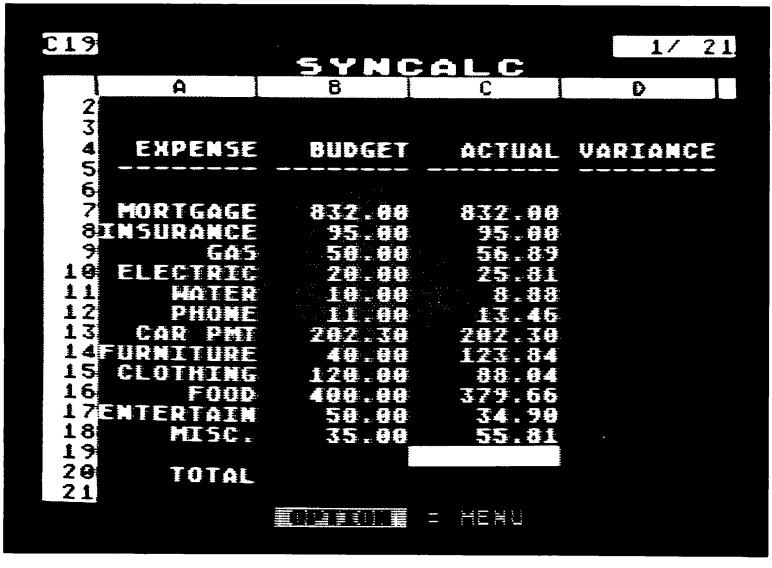
Position your cursor at cell B7:
ENTER: 832 for the budgeted mortgage payment.

NOTE: Do not enter a dollar sign ($) at this point. Placing dollar signs on the worksheet is a formatting option which will be discussed later.
PRESS (RETURN).

Position the cursor at cell B8:
ENTER: 95
PRESS (RETURN).

Position the cursor at cell B9:
ENTER: 50
PRESS (RETURN).

Continue making entries in Columns B and C in the same way outlined above until your worksheet looks like this:



All numbers are right justified with 2 decimal places by default.

Calculating The Variance

Now that all the labels and data entries are in place, we can begin performing some calculations with *SynCalc*. The first calculation will be the VARIANCE (Column D) which is

the difference between the ACTUAL expenditure (Column C) and the BUDGETed expenditure (Column B).

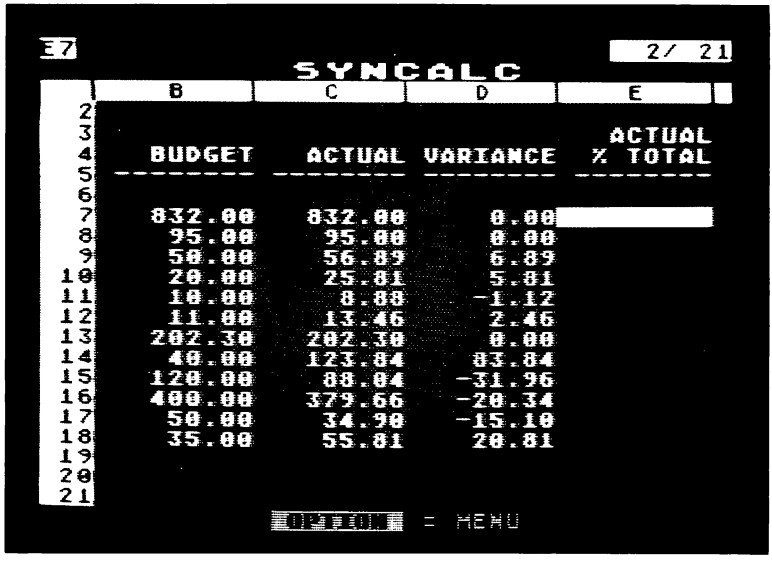
Position the worksheet cursor with CTRL and the arrow keys at cell D7:
ENTER: + (A plus sign brings up the NUMERIC entry window).
PRESS CTRL ← to point to C7.
ENTER: - (a minus sign)
PRESS CTRL ← to point to B7.
PRESS RETURN.

You should see 0.00 appear in cell D7 since the actual equals the budget.

The next step is to copy the variance formula down column D to complete the calculations.
PRESS OPTION for Main Menu.
Use CTRL and the arrow keys to select COMMAND and:
PRESS RETURN.
Use CTRL and the arrow keys to select COPY and:
PRESS RETURN.

The COPY sub-screen appears requesting your SOURCE and DESTINATION ranges. Use CTRL and the arrow keys to enter D7 for the beginning SOURCE cell.
PRESS RETURN twice since there is only one SOURCE cell.
Use CTRL and the arrow keys to enter D8 as the start of DESTINATION range.
PRESS RETURN.
Use CTRL and the arrow keys to enter D18 as the end of the DESTINATION range.
PRESS RETURN.

Watch your screen as Column D is filled in.



Sum Formula

Before we can calculate Column E, it is necessary to find the total for Column C. This is because the formula for calculating Column E (the percent of the total budget each expense actually is) requires the total for Column C. Since we are going to total Column C, we might as well total columns B and D as well with the COPY command.

Position your worksheet cursor at cell B20:
ENTER: @SUM (B7:B18)
PRESS (RETURN).

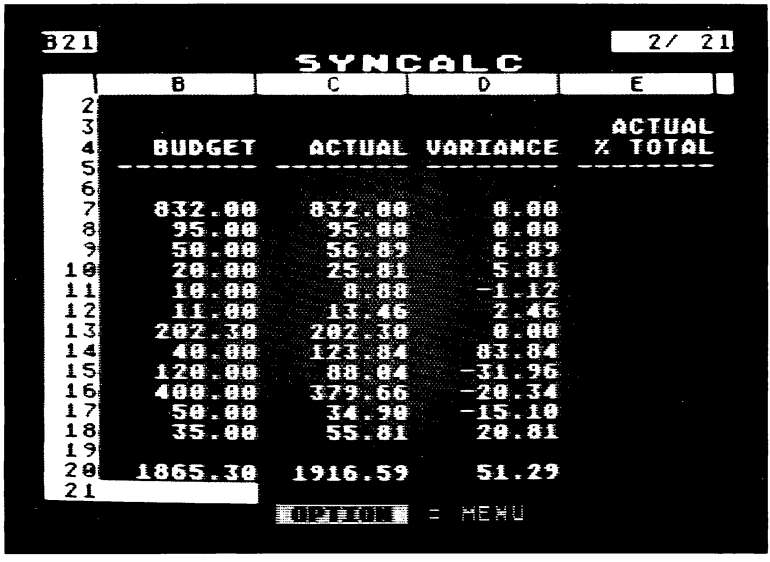
The total for Column B (1865.30) will appear at cell B20. The dollar sign will come later when we format the worksheet.

Copying The Sum Formula

Since we need totals for Columns C and D, the next step is to copy the formula to cell C20 and D20.
PRESS (OPTION) for Main Menu.
Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select COPY and:
PRESS (RETURN).

The COPY sub-menu appears asking for SOURCE and DESTINATION ranges.
Use (CTRL) and the arrow keys to enter B20 for beginning SOURCE cell.
PRESS (RETURN) twice because there is only one SOURCE cell.
Use (CTRL) and the arrow keys to enter C20 for beginning DESTINATION cell.
PRESS (RETURN).
Use (CTRL) and the arrow keys to enter D20 for ending DESTINATION cell.
PRESS (RETURN).

Watch your screen as *SynCalc* totals columns C and D almost instantly.



Calculating Percents

Now that we have a total for Column C we can calculate what percent each budgeted item is against the total expenditure. To do this, we will place a formula at cell E7. Position the worksheet cursor with (CTRL) and the arrow keys at cell E7 and,
ENTER: + (a plus sign)

The familiar NUMERIC entry window appears awaiting your formula.

We want figures for the actual expenses rather than the budgeted expenses, so the formula will be created from cells in Column C, ACTUAL expenses. Since we want to divide the ACTUAL expense by the TOTAL expense, our formula should look like this:
ENTER: C7 by using (CTRL) and the arrow keys.
ENTER: / (slash).

ENTER: C20 using (CTRL) and the arrow keys.
PRESS (RETURN).

SynCalc recognizes the slash sign (/) in the NUMERIC mode as a command to perform division. The asterisk was described earlier as denoting multiplication functions.

The value 0.43 should appear in cell E7.

Now copy the formula at cell E7 (C7/C20) to cells E8 to E18 using the COPY command as described earlier. Be ready for a surprise.

What happened? We entered the formula C7/C20 as a relative address rather than as an absolute address. Remember the discussion earlier about relative and absolute addresses? You may want to reread it if you have forgotten the concepts. Briefly, what happened when we entered the formula as we did and pressed (RETURN) was that *SynCalc* calculated the first entry correctly. Then when it went back to calculate the second entry for position E8, the figure for C7 became the number at C8 which is correct, but the figure for C20 became C21 which is a non-existent value on our worksheet. As a result, *SynCalc* began dividing by Zero and generating the EEEEEEEEE on your screen. C20 has to be written into the formula as an absolute address, because it does not change. To do this,

Position the worksheet cursor in cell E7 and:
PRESS (RETURN).

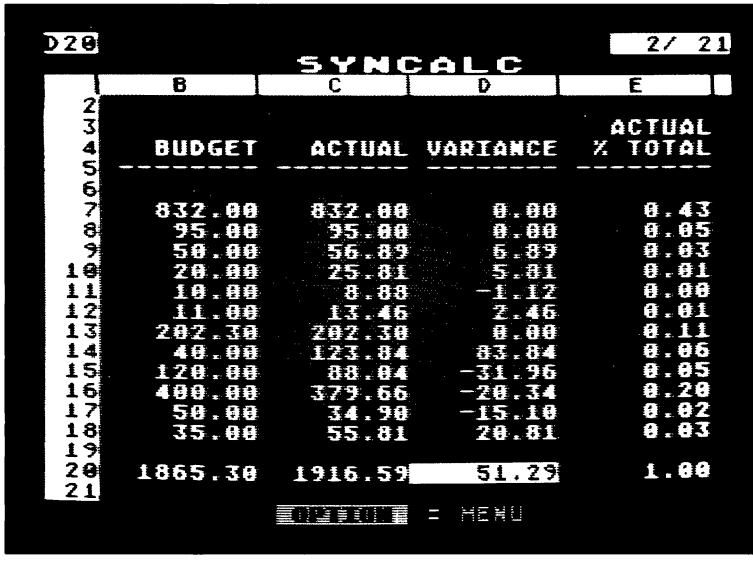
Use the arrow keys to edit the formula to now read: C7/[C20] and re-copy this formula down the column from cells E8 to E18.

That's much better! The variance percentages appear down Column E. Now we have almost completed making the calculations for the worksheet. However, we still need a total for Column E. To get this, we can use the Sum Formula at cell D20 and copy it to cell E20. Move the worksheet cursor to cell D20.

PRESS (OPTION) for Main Menu.
Use (CTRL) and the arrow key to select COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select COPY and:
PRESS (RETURN).

The COPY sub-menu appears requesting SOURCE and DESTINATION ranges.
ENTER: D20 for the beginning SOURCE cell.
PRESS (RETURN) twice as there is only one SOURCE cell.
ENTER: E20 as the beginning DESTINATION cell using cell pointing.
PRESS (RETURN) twice as there is only one DESTINATION cell.

Your calculations are now complete and we are ready to begin formatting the spreadsheet.



Adding Commas To Numbers

Next we can add commas to the total figures for columns B and C since both contain numbers over one thousand. To do this:
PRESS (OPTION) for Main Menu.
Use (CTRL) and the arrow keys and:
PRESS (RETURN) to select: COMMAND, FORMAT, and then COMMAS.

To indicate the affected cells:
Use (CTRL) and the arrow keys to point to cell B20.
PRESS (RETURN).
Use (CTRL) and the arrow keys to point to cell C20.
PRESS (RETURN).

Adding Percent Signs

Next we want to add percent signs to the numbers in column E. To do this,
PRESS [OPTION] for Main Menu.
Use [CTRL] and the arrow keys to select COMMAND:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select FORMAT:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select PERCENT:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select cell E7 as the beginning of the RANGE and:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select cell E20 as the end of the RANGE and:
PRESS [RETURN].

Adding Dollar Signs

PRESS [OPTION] for Main Menu.
Select COMMAND, FORMAT, and then DOLLARS.
PRESS [CTRL], the arrow keys and [RETURN] to select the range B7 to D20.

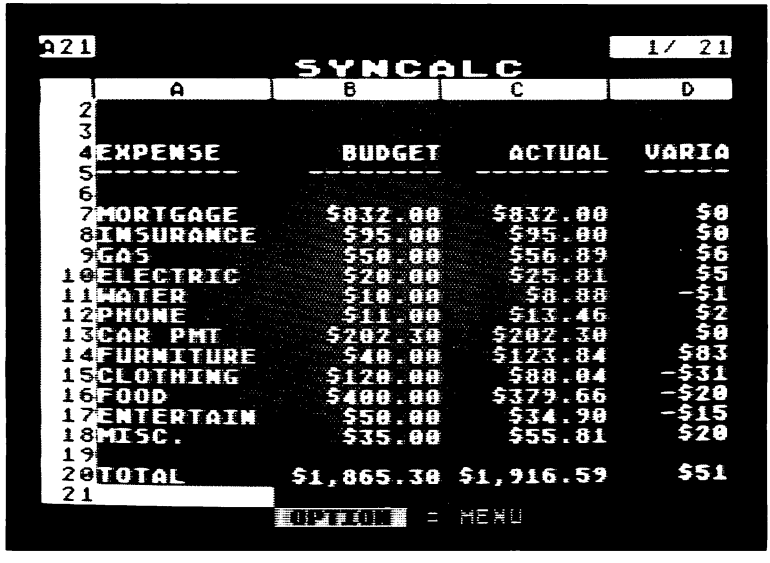
Left Justify

Next let's left justify Column A. This will give the worksheet a neat appearance. To do this,
PRESS [OPTION] for Main Menu.
Use [CTRL] and the arrow keys to select COMMAND.
PRESS [RETURN].
The cursor is over FORMAT so:
PRESS [RETURN].
The cursor is over JUSTIFY, so:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select LEFT justify.

PRESS (RETURN).
Fill in the destination RANGE as: A4 to A20, pressing (RETURN) after each cell address.

Resetting Column Widths Globally

You may notice that the addition of commas and dollar signs in row 20 has caused some crowding of the display. We can remedy this by setting all the column widths to a larger value.
PRESS (OPTION) for the Main Menu.
Move the cursor to COMMAND and:
PRESS (RETURN).
Move the cursor to GLOBAL and:
PRESS (RETURN).
Move the cursor to WIDTH and:
PRESS (RETURN).
ENTER: 10 (for the value).
PRESS (RETURN).



Fixing Titles

Now that we have the worksheet set up and formatted, you can use the arrow keys to scroll back and forth to view it on the display screen. We can fix the titles in Column A so that when you scroll to view Column E you will still be able to see what the budget items are. To do this, move the worksheet cursor to cell A4, and:
PRESS (OPTION) for Main Menu.
Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select TITLES and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select VERTICAL and:
PRESS (RETURN).

Now move the cursor to Column B and:
PRESS (RETURN).

Now use (CTRL) and the arrow keys to experiment with scrolling your worksheet from side to side as Column A remains in place. You can scroll Column E into view and still read the row labels in Column A at the same time.

If you want to change the direction in which the titles are fixed, you must first cancel the current direction and then fix them in the new direction.

Splitting The Screen

Another way to compare columns A and E is to first make sure your screen is scrolled all the way to the left. Position the worksheet cursor at cell C4, and:
PRESS (OPTION) for Main Menu.
Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).

Use CTRL and the arrow keys to select WINDOW and:
PRESS RETURN.
Use CTRL and the arrow keys to select VERTICAL and:
PRESS RETURN.
SYNCHED is the default selection and is the one we will use here, so:
PRESS RETURN.

Since your cursor is positioned correctly:
PRESS RETURN.

Your screen will split showing two windows. On the left are columns A and B, on the right are columns C and D. The cursor defaults to the right side of the screen. If you want to move the cursor to the left side, do so by pressing SELECT. Press SELECT again to move the cursor back to the right side of the screen.

Use CTRL and the arrow keys to scroll the worksheet until you bring Column E (Actual % Total) onto the screen. Now you can compare your budget with the percentage. Scroll the screen to the left and bring Column C (Actual) into view to compare it to the Budgeted expenditures.

To return your display screen to one window:
PRESS OPTION to engage the Main Menu.
Use CTRL and the arrow keys to select COMMAND and:
PRESS RETURN.
Use CTRL and the arrow keys to select WINDOW and:
PRESS RETURN.
Use CTRL and the arrow keys to select SINGLE and:
PRESS RETURN.

Before going on, you may want to go back into the Windows sub-menu and split the screen horizontally by selecting HORIZON. and then SYNCHED. Experiment

with moving the cursor from window to window and scrolling. When you're done, restore the worksheet to a single window.

Insert and Delete Commands

If you wanted to add an item to your household budget but felt that it belonged in the middle of the list or at the beginning, there is a way to insert a new row. For example, after setting up the sheet as we have done, you may decide to add a space for SAVINGS near the top of the list. Position the cursor at cell A8, and:
PRESS (OPTION).
Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select INSERT and:
PRESS (RETURN).

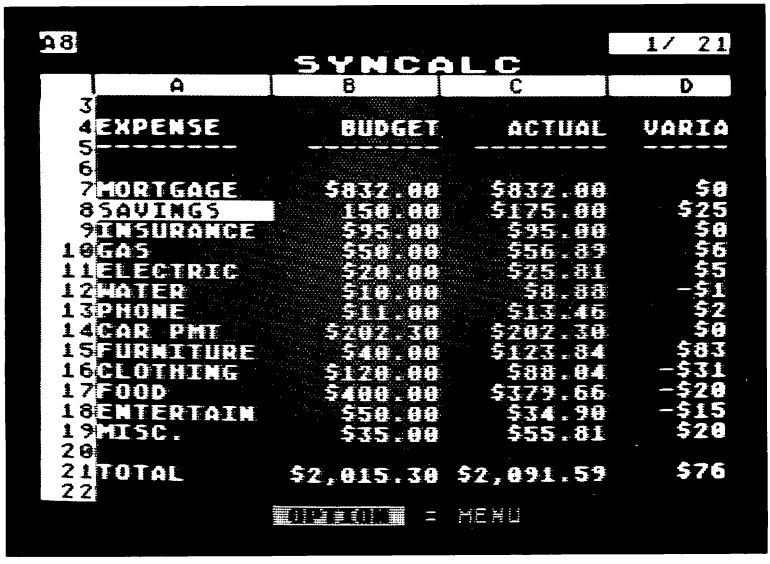
The next screen asks if you want to insert a row or a column. The cursor is positioned over ROW, so simply:
PRESS (RETURN) to select ROW.

Since your worksheet cursor is already properly positioned:
PRESS (RETURN) again to execute the command.

Everything at and below the cursor will move down one row making room for your entry. This also means that your last entry, MISC., is now positioned at cell A19 with totals at A21, B21, C21, D21, and E21. This will not, however, affect your Sum Formula that was originally placed at cell B20. It was moved down one row and the formula adjusted to include sums for cells B7 to B19.
ENTER: SAVINGS at cell A8.

Format cell A8 to be left justified so that it matches the rest of column A.

Now fill in a budgeted amount of 150 at cell B8 and an actual amount of 175. Use the COPY commands to calculate the Variance and the Actual % Total and to adjust the totals. Use the FORMAT option to go in and add the "$" in cells B8 and C8. You should now be familiar enough with these commands to go in and perform the operations without detailed instructions. Go ahead and try it yourself. When you're done, your screen should look similar to this:



You can also delete rows or columns. For example, position the cursor at cell A18, and,
PRESS (OPTION) for the Main Menu.
Use (CTRL) and the arrow keys to select COMMAND.
PRESS (RETURN).
Use (CTRL) and the arrow keys to select DELETE.
PRESS (RETURN).

The next screen is asking you if you want to delete a row or a column. Since the cursor is positioned over ROW, simply:
PRESS [RETURN].

Once again, you can use [CTRL] and the arrow keys to reposition the cursor. However, since we have already positioned it where we want it:
PRESS [RETURN] and watch what happens on your screen.

The entries for ENTERTAIN have been removed, bringing the totals back up to row 20.

NOTE: If you delete a row or column containing a cell address used in a formula, *SynCalc* will warn you of the condition by filling the formula cell with question marks. You can re-enter the formula by placing the cursor over the cell and pressing [RETURN] twice.

Move

In addition to inserting and deleting, it is also possible to move rows, columns, or blocks with the MOVE command. To see how this works:
PRESS [OPTION] for Main Menu.
Use [CTRL] and the arrow keys to select COMMAND and:
PRESS [RETURN].
Use [CTRL] and the arrow keys to select MOVE and:
PRESS [RETURN].

A sub-menu appears asking you to indicate the source range. If you are moving a column or row, either type in or use [CTRL] and the arrow keys to point to the beginning and ending cells you intend to move. If you are moving a block, the first SOURCE is the upper-left cell address and the second SOURCE is the lower-right cell address.

For our purposes here,
ENTER: A7 as the beginning SOURCE cell.
PRESS (RETURN).
ENTER: E7 as the ending SOURCE cell.
PRESS (RETURN).

The next screen is asking you for the TARGET CELL, the cell marking the upper-left corner where you want to move the block to. Anything occupying the space that you move this row to will be erased.
ENTER: A25
PRESS (RETURN).

This block will be moved with all formulas unchanged.

Headings

SynCalc has a feature which allows you to remove the row and column headings from the screen. To see how this works,
PRESS (OPTION) for the Main Menu.
Use (CTRL) and the arrow keys to select COMMAND and:
PRESS (RETURN).
Use (CTRL) and the arrow keys to select HEADINGS and:
PRESS (RETURN) and watch your screen.

To bring the headings back onto the screen simply perform the above procedure over again.

This gives you the option of viewing your worksheet with or without headings. If you print out your worksheet and the headings are visible, they will also print out on your printer. To remove the headings, simply turn them off before printing.

Sort

SynCalc has a sorting feature which will allow you to arrange your data entries in alphabetic and/or numeric order. We can use the household budget worksheet to see how this works.
PRESS (OPTION) for the Main Menu.
Use (CTRL) and the arrow keys to select COMMAND.
PRESS (RETURN).
Use (CTRL) and the arrow keys to select SORT.
PRESS (RETURN).

The next sub-menu asks you to select ASCENDing or DESCENDing order.
PRESS (RETURN) to select ASCENDing.

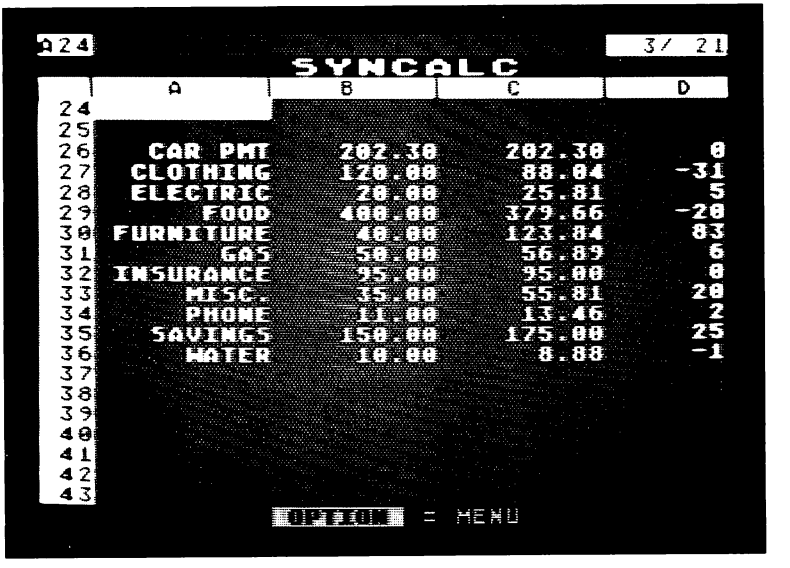
Next you must specify the block of cells you wish sorted. *SynCalc* will sort each row in the cell block based on an index column which we will soon enter. For now,
ENTER: A7 to E18 as the SOURCE range, pressing (RETURN) after each entry.

Enter Column A as the SORT COLUMN by moving the cursor to Column A and:
PRESS (RETURN).

Last, we must specify the upper-left cell where the sorted cell block is to go. *SynCalc* sorts only the results, not the formulas. Be careful to specify a TARGET CELL that will not overlap your original worksheet, because the entire block of data is reproduced in the sorted list.
ENTER: A25 as the TARGET CELL.
PRESS (RETURN).

Beginning at cell A25 you will have an alphabetical list of your expenses and the corresponding amounts. For

sorting, blanks come first, then numerics, then capitalized text entries, then lowercase text entries. You must remember that the sort applies only to the entries as they are at the time you execute the sort command. Any subsequent changes in the original cell block will not be reflected in the sorted cell block. You may find that this will require re-sorting after editing.

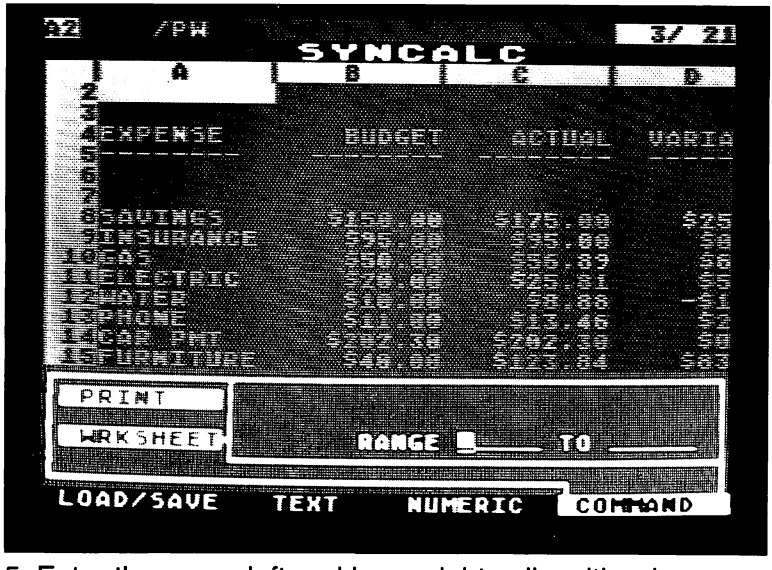


Printing The Worksheet

The Print command is used to make a hard copy of your worksheet. You can print all or part of the worksheet, and if the worksheet is very wide, it can be printed on your printer in sections and pasted together later. We will cover the principles of the Print command here, and recommend that you familiarize yourself with the reference manuals for your particular equipment.

Print Commands

1. Check your printer. Is the paper inserted correctly, is it hooked up to your computer, is it turned on?
2. Activate the Main Menu by pressing (OPTION). Select COMMAND by pressing (RETURN). Use (CTRL) and the arrow keys and (RETURN) to select PRINT.
3. You can now select to print either the WRKSHEET or CONTENTS. Printing the WRKSHEET will give you an output just like your screens. Selecting CONTENTS will output a cell by cell listing of the entries. Make your selection by pressing (RETURN).
4. The sub-menu appears asking you to indicate the RANGE (section of the worksheet you want to print).



5. Enter the upper-left and lower-right cells, either by pointing the cursor or typing it onto the blank lines.
6. Press (RETURN) after each entry.

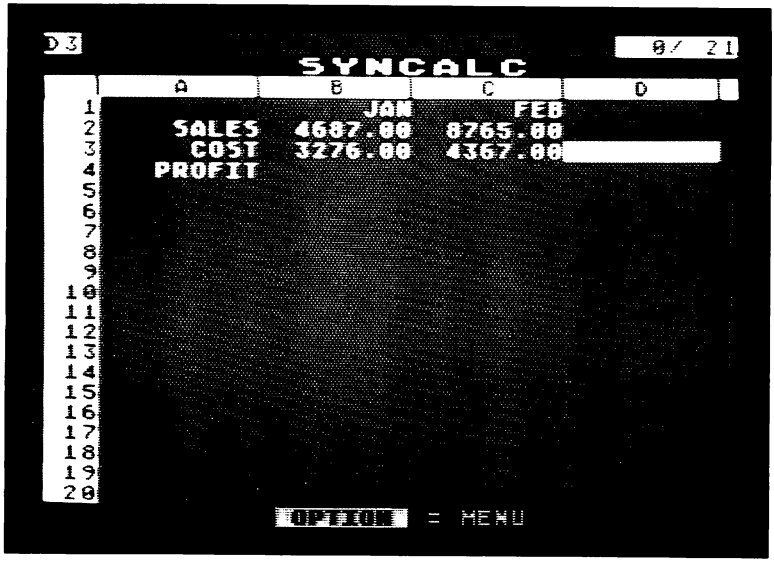
Printing In Sections

Printing in sections will allow you to output worksheets which would otherwise exceed the width of your printer. Another way to accommodate a larger worksheet is to engage the condensed type font if your printer supports it.

Referencing Labels

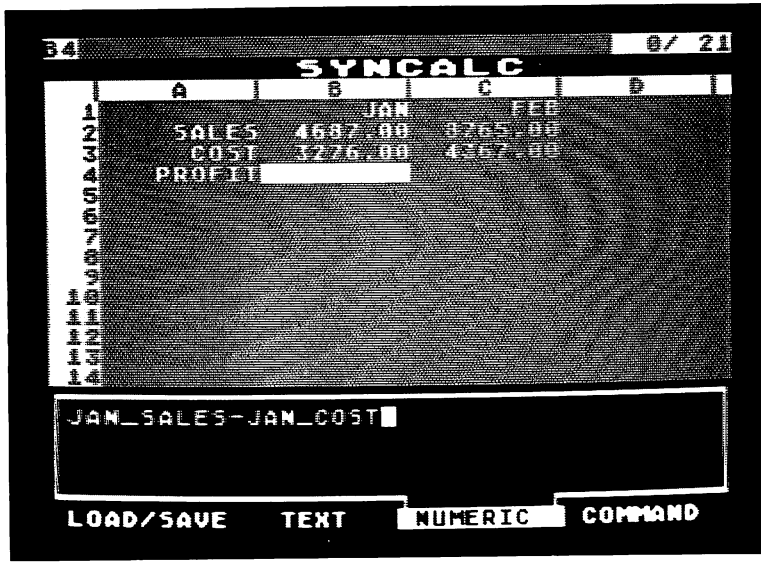
With *SynCalc* it is possible to perform calculations by referencing labels instead of cell addresses. To see an example of this, use the Global Erase Command to clear the worksheet (discussed earlier in the manual under Clearing the Worksheet in Lesson One), and make the following entries. By now you should be familiar with the procedure for making text and numeric entries.

ENTER: SALES at cell A2
ENTER: COST at cell A3
ENTER: PROFIT at cell A4
ENTER: JAN at cell B1
ENTER: FEB at cell C1
ENTER: 4687 at cell B2
ENTER: 8765 at cell C2
ENTER: 3276 at cell B3
ENTER: 4367 at cell C3



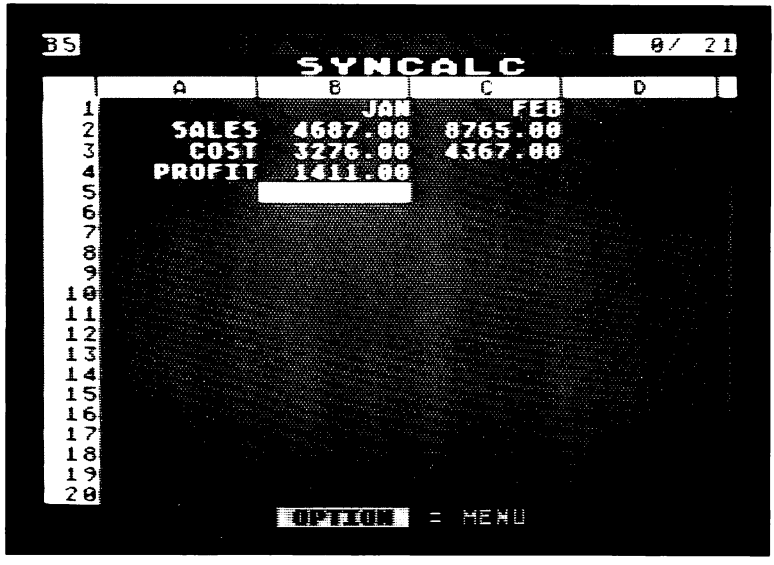
PRESS (OPTION) to activate the Main Menu.
Select COMMAND and then USE LBLS. You will then be asked to specify the label column and row. By entering A1 you specify column A and row 1 as the column and the row that contain your labels.
ENTER: A1
PRESS (RETURN).

Now with the cursor positioned at cell B4, call up the numeric entry window by entering a plus sign (+). Now make the following entry in the numeric entry window:
ENTER: JAN_SALES-JAN_COST



PRESS (RETURN).

The underline character is used to separate the column and row labels for referencing cells. These labels are used only for input. When edited, all formulas show cell references in their normal address manner (as in A1).



The figure 1411.00 has been entered at cell B4.

Global Commands

Earlier we had you use the Global Erase command to clear the entire worksheet. You can also use global commands for other operations. The difference between the global commands and the other functions on the COMMAND sub-menu is that the global commands affect the entire worksheet while the operations on the COMMAND menu affect specific rows and columns, with one exception: any cell that has been individually formatted, will not respond to a global format or unformat.

Be aware that when you perform global formatting it becomes the default format for any subsequently entered cells. This means that if you do a global format for dollar signs and then enter another numeric figure, it will be formatted with a dollar sign.

Recalculation

SynCalc normally recalculates the values of all the formulas on the sheet by starting at the upper left-hand corner of the sheet and working top down, left to right until it reaches the lower right-hand corner of the sheet. Each formula is evaluated only once.

This means, for example, that the entry at position A1 should not be a formula that references other positions, and that in general formulas that reference other entries should be located below or to the right of its component cells.

SynCalc can evaluate the formulas on the sheet in either of two possible orders: down the columns or across the rows.

When you load *SynCalc* or clear the sheet, it is set to recalculate columns first. It will evaluate first A1, then A2, A3, etc, then B1, B2, B3, etc., and so on. If you change the recalculation order to rows first, *SynCalc* will evaluate first A1 then B1, C1, etc., then A2, B2, C2, and so on.

For many worksheets the choice of rows versus column first recalculation has no effect on the results displayed on the screen. However, there are cases where you must use the right calculation order to obtain correct results, and it is important to recognize these cases when they do arise.

Several possibilities exist for establishing the recalculation criteria:

RECALC: **Performs a single recalculation and is the same as pressing (START) while in the worksheet. Protected value cells are not changed.**

FORCE: **Forces a recalculation of all cells, including protected cells.**

AUTO: **Automatic recalculation on each entry. This is the default condition.**

MANUAL: **No recalculation is performed after each entry. You must explicitly recalculate by pressing (START) or selecting the RECALC option mentioned above.**

BY ROW: **Calculate left to right then top to bottom.**

BY COL: **Calculate top to bottom, then left to right. This is the default condition.**

Format

With the GLOBAL FORMAT command you can format the entire worksheet. The selections are: JUSTIFY, MARGIN, PROTECT, DOLLARS, COMMAS, PERCENT, PRECISION, NUMBER and SIGN. These work exactly as described under Formatting The Screen Display, except that the selected formatting operation will affect the entire worksheet except in cells that have been individually formatted. That is, if you select percents, all numbers will be multiplied by 100 and a trailing percent sign will appear.

Unformat

Use the GLOBAL UNFORMAT command to remove global formats. The selections for the unformatting operation are: DOLLARS, COMMAS, PROTECT, and PERCENT. Again, this will affect all cells except those which were individually formatted.

Width

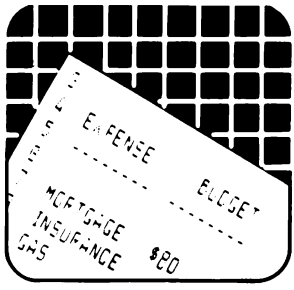
You can use the GLOBAL WIDTH command to change the column widths on the entire worksheet. Simply fill in a number between 1 and 36 and press (RETURN).

Text Mode

Normally, if you make text entries that are larger than 9 characters, the extra characters overflow into the adjacent cell. However, by selecting the BOUNDED text mode under the GLOBAL command, you can defeat this feature. When in the bounded text mode, only as many characters as will fit in the column will be displayed. The default mode is OVERFLOW.

Erase

Use the GLOBAL ERASE command to clear the entire worksheet. This can be used to obtain a clean slate to begin work on a new worksheet.



3 Reference

Now that we have covered most of the essential features of *SynCalc*, we will cover some of the other more advanced aspects such as Expert User Commands. While you might not need all the information contained in this section, glance through it to familiarize yourself with what it has to offer.

Numbers And Formats

It is important to remember that it is possible to enter a number too long to display with the current column width. In such a case, *SynCalc* will fill the cell with greater than symbols ">" to indicate that the number is too large. Resetting the column width to a larger value can remedy the situation. In any event, the full value of the cell is maintained by *SynCalc*, even if you cannot see it on your worksheet.

If you encounter a cell which is filled with question marks "?", this indicates that you have changed the structure of your worksheet and affected cells referenced in your formulas. For example, if you enter the formula 10 + A2 in cell A3 and enter the value 100 in cell A2, cell A3 will display the value 110. If we now position the cursor in row 2 and delete the row, *SynCalc* will fill the cell A2 with question marks after deleting the row and moving the formula in A3 to cell A2. This is *SynCalc*'s way of warning you that you have deleted a referenced cell. You may choose not to change the cell entry by simply positioning the cursor over it, pressing (RETURN) to edit the cell, and pressing (RETURN) once more to enter the formula.

If *SynCalc* encounters a calculation problem, it will fill the cell with upper case "E"s. This can be caused by such things as dividing by zero or taking the square root of a negative number.

Exponential Notation

SynCalc uses exponential notation to represent numbers longer than 10 digits. Exponential notation can be used to represent very large or very small numbers in a concise, easy to read manner. *SynCalc* only uses exponential notation within the NUMERIC entry window.

For example:

Value: 10,000,000,000
NUMERIC entry window: 1E+10
Worksheet: 10000000000.00 (provided your column is at least 14 characters wide)

This saves room when entering formulas while giving you the flexibility of displaying all the digits of large or small numbers or using exponential notation on the worksheet with the scientific number format.

Formula Evaluation

With complex formulas it is important to know how *SynCalc* will perform the mathematics so that you can construct a formula to obtain the correct result. For example, the formula 18+12/6 can be evaluated two ways. Either you can add 18 + 12 and divide by 6 equaling 5 or you can divide 12 by 6 and add 18 which equals 20.

SynCalc evaluates mathematical formulas based on standard priorities. That is parenthesized and exponential terms are computed first, followed left to right by * and /, and lastly + and -. Therefore, the answer to our example is 20.

Parentheses can be nested (placed within other sets of parentheses) any number of times. *SynCalc* will begin the calculations with the numbers in the innermost parentheses and will then work outwards from left to right.

Built-In Functions

SynCalc provides you with many useful mathematical, statistical, and business functions. You might think of these as built-in formulas. Each function has a value based on the evaulation of the formula and its arguments. Each function is called by typing the function name, followed by its arguments. The function name must always begin with the symbol "@". The arguments follow the function name, separated by commas, and enclosed in parentheses:

> @function name(argument1, argument2, . . . , argumentN)

Depending on the function selected, an argument can be either a single value or a range:

If the function requires a single value, the argument can be:

> Number
> Cell address
> Function Formula

If the function requires a range, the argument should be of the form:

cell address:cell address

You must supply the correct number and type of arguments for the function to work properly. These arguments can be either typed directly, from the keyboard or by cell pointing if you are using the menus. The provided functions are accurate to about eight significant digits. When in the NUMERIC entry window, pressing [OPTION] or [SELECT] will bring up function reference windows.

Summary of Functions

SynCalc's built-in functions are as follows. Detailed information on each function follows this summary.

Mathematical functions:

@ABS(x)	absolute value of x
@ACOS(x)	arc cosine of x
@ASIN(x)	arc sine of x
@ATAN(x)	arc tangent of x
@COS(x)	cosine of x
@EXP(x)	e to the power of x
@INT(x)	integer part of x
@LN(x)	natural log of x
@LOG(x)	common log of x
@PI	pi (π)
@SIN(x)	sine of x
@SQRT(x)	square root of x
@TAN(x)	tangent of x

Logical functions:

@IF condition THEN x ELSE y	the value of x if condition is true, the value of y if condition is false (condition can contain AND, OR, or NOT).

Special functions:

@LOOKUP(X, range, offset)	lookup table

Financial functions:

@FV(payment, interest, term)	future value
@NPV(range, interest)	net present value
@PMT(principal, interest, term)	payment

Statistical functions:

@AVG(range)	averages values
@CNT(range)	counts the number of numeric entries
@MEAN(range)	sample mean
@MIN(range)	minimum value
@MAX(range)	maximum value
@RNG(range)	range (maximum-minimum)
@SD(range)	sample standard deviation
@SUM(range)	sum
@VAR(range)	sample variance

Alphabetical Function Reference

@ABS(x)

The absolute value of x.

Examples: @ABS(9.25) = 9.25
@ABS(-3.29) = 3.29
@ABS(A1) = absolute value of cell A1

@ACOS(x)

The arc cosine of x. This is the angle in radians where cosine is x. The value x must be between -1 and +1. The value of the function is always between 0 and π.

Examples: @ACOS(-.3) = 1.8754889
@ACOS(A1) = arc cosine of value at cell A1

@ASIN(x)

The arc sine of x. This is the angle in radians where sine is x. The value of x must be between -1 and +1. The value of the function is always between 0 and π.

Examples: @ASIN(-.3) = -.3046926510
@ASIN(A1) = arc sine of value at cell A1.

@ATAN(x)

The arc tangent of x. This is the angle in radians where tangent is x. The value of the function is always between $-\pi/2$ and $+\pi/2$.

Examples: @ATAN(-.3) = -.29145679
@ATAN(A1) = arc tangent of value at cell A1.

@AVG(range)

The value of this function is the average of all the numeric values in the specified range. This is equivalent to @SUM(range)/@CNT(range). Blank and text cells in the range are ignored.

Example:

	A
1	2.00
2	10.00
3	12.00

@AVG(A1:A3) = 8.00

@CNT(range)

The value of the function is the number of numeric entries in the specified range. Empty cells and text entries are ignored.

Example:

	A
1	3.14
2	10.50
3	JUNE
4	9.81

@CNT(A1:A4) = 3

@COS(x)

The cosine of x where x is in radians.

Examples: @COS(.3) = .9553365
@COS(A1) = cosine of value at cell A1.

@EXP(x)

The value of this function is equal to e raised to the x power.

Example: @EXP(1.258) = 3.5183776

@FV(payment, interest, term)

This function calculates the future value of an annuity given the payment per period, interest rate per period, and number of periods. The formula is:

$$FV = payment \frac{(1 + interest)^{term} - 1}{interest}$$

Example: @FV(1000, .1, 12) = 21384.28

@IF condition THEN x ELSE y

The value of this function is x if condition is true and y if condition is false. The condition can be any valid comparison using <, <=, >=, >, =, or <> operators as well as AND or OR. The values x and y can be any valid number of formula.

Example:
@IFA2>A1 THEN @SUM(A1:A2)ELSE@AVG(A1:A2)
Returns the sum of A1 and A2 if A2>A1, or the average of A1 and A2 if A2 is not greater than A1.

@INT(x)

This function gives the integer portion of x.

Examples: @INT(3.129) = 3
@INT(A1) = integer portion of value at cell A1.

@LOOKUP(x,range,offset)

This function returns the value from the table specified by range and offset given the value x to look up.

Example:

	A	B	C
1	2.30	1.00	11.00
2	3.45	2.00	12.00
3	5.89	3.00	13.00
4	7.42	4.00	14.00

@LOOKUP(3.45,A1:A4,2) = 12.00

@LN(x)

This function gives the natural log of x.

Example: @LN(1.258) = .22952316

@LOG(x)

The value of this function is the common log of x.

Example: @LOG(1.258) = .09968064

@MAX(range)

This function gives the maximum value in the specified range. Empty cells and text entries are ignored.

Example:

	A
1	14.23
2	2.01
3	5.49
4	23.40

@MAX(A1:A4) = 23.40

@MEAN(range)

The value of this function is the sample mean. This function is equivalent to @SUM(range)/(@CNT(range)-1).

Example:

	A
1	3.00
2	9.00
3	11.00

@MEAN(A1:A3) = 11.50

@MIN(range)

This function gives the minimum value in the specified range. Empty cells and text entries are ignored:

Example:

	A
1	14.23
2	2.01
3	5.49
4	23.40

@MIN(A1:A4) = 2.01

@NPV(range, interest)

This function calculates the net present value of the payments in the range at the specified interest rate. The range must be part of a row or a column, not a rectangular block.

The formula is:

$$\sum_{i=0}^{n} \frac{P}{(1+x)^i}$$

Example:

	A
1	−1000.00
2	400.00
3	400.00
4	400.00

@NPV(A1:A4,.1) = −4.78

@PI

This function does not require any arguments. It provides the value of pi which can be used to convert degrees to radians for use with the trigonometric functions.

Example: @PI = 3.141592 . . .

@PMT(principal,interest,term)

This function calculates the payment per period given the principal, interest rate per period, and number of periods. The formula is:

$$PMT = principal \left(\frac{interest}{1-(1+interest)^{term}} \right)$$

Example: @PMT(1000, .1, 12) = 146.76332

@RNG(range)

This function gives the range of values in the specified range. This function is equivalent to @MAX(range)-@MIN(range).

Example:

	A
1	10.00
2	4.00
3	12.00
4	1.00

@RNG(A1:A4) = 11.00

@SD(range)

This function calculates the sample standard deviation of the values in the specified range. Empty cells and text entries are ignored. The corresponding population standard deviation can easily be calculated as:

@SQRT((@CNT(range)-1)/@CNT(range))*@SD(range)

Example:

	A
1	3.40
2	8.29
3	2.19
4	5.53

@SD(A1:A4) = 2.6754485

@SIN(x)

The value of this function is the sine of x where x is in radians.

Example: @SIN(.3) = .29552021
@SIN(A1) = sine of value at cell A1.

@SQRT(x)

This function returns the square root of x.

Example: @SQRT(3.42) = 1.8493242
@SQRT(A1) = square root of value at cell A1.

@SUM(range)

The value of this function is the sum of the numeric entries in the specified range. Empty cells and text entries are ignored.

Example:

	A
1	3.00
2	5.00
3	JUNE
4	8.00

@SUM(A1:A4) = 16.00

@TAN(x)

This function gives the tangent of x where x is in radians:

Example: @TAN(.3) = .30933625
@TAN(A1) = tangent of value at cell A1.

@VAR(range)

This function calculates the sample variance of the values in the specified range. Empty cells and text entries are

ignored. The corresponding population variance can be easily calculated as:

((@CNT(range)-1)/@CNT(range))*@VAR/range)

Example:

	A
1	3.40
2	8.29
3	2.19
4	5.53

@VAR(A1:A4) = 7.1580250

Command Reference

The following is a summary of the commands in *SynCalc*. The corresponding expert user command is given in parentheses. All expert user commands begin with a slash "/". You should not type the parentheses. You must press (RETURN) to execute each expert user command.

Load/Save

The following commands can be selected from the LOAD/SAVE sub-menu.

LOAD WRKSHEET (/LLW cell filespec.)

This command will load the selected worksheet file from disk starting at the specified cell. You will use this often to recall previously saved worksheets.

Example: /LLW A1 D:SAMPLE

LOAD DATA (/LLD order operation cell filespec.)

This command will load the selected data (DIF) file into the worksheet at the specified cell in the order given and by the indicated operation.

Valid entries for the parameters are:

Order	R for row C for column
Operation	O for overlay + for add - for subtract * for multiply / for divide

This command will allow you to load data from other programs which produce DIF files, like *SynFile+*, *SynTrend*, and VisiCalc.

Example: /LLDRO A1 D:SAMPLE

SAVE WRKSHEET (/LSW filespec.)

This command saves your current worksheet to the specified file. *SynCalc* automatically appends the extender ".SC" to make it as a *SynCalc* worksheet file.

Example: /LSW D:SAMPLE

SAVE DATA (/LSD order range filespec.)

This command saves data in the selected range in DIF formats to the specified file in the given order. Valid entries for the parameters are:

Order R for row
C for column

Example: /LSDR A1:D10 D:SAMPLE

SAVE TEXT (/LST range filespec.)

This command saves the current worksheet as a text file for merging with AtariWriter. The ".TXT" extender is automatically affixed by *SynCalc* to the file name.

Example: /LST A1:D10 D:SAMPLE

FORMAT DISK (/LFD drive number)

This command formats the disk in the selected drive number. *SynCalc* allows you to use either drive 1 or 2.

Example: /LFD1

DELETE FILE (/LD filetype filespec.)

This command deletes the selected file from the disk. Valid entries are:

Filetype W for worksheet files.
D for data files.
T for text files.

Example: /LDW D:SAMPLE

RENAME FILE (/LR filetype oldfilespec. newfilespec.)

This command renames old filespec. to new filespec. on disk. Valid entries are:

Filetype W for worksheet files.
D for data files.
T for text files.

Example: /LRW D:SAMPLE D:TEST

VC▸SC

This command will load the VisiCalc to *SynCalc* conversion program from the program disk in drive 1. The conversion program will process a VisiCalc worksheet file and make it compatible with *SynCalc*. Any incompatibilities from the VisiCalc file will be converted to text entries. This command can only be executed from the menus.

Text Entry Window

The TEXT entry window is used to enter or edit a text entry. The small vertical mark indicates the last character that can be entered before exceeding the current column width.

Numeric Entry Window

The NUMERIC entry window allows the entry or editing of numbers and formulas. There are two modes; cell point mode and edit mode. Cell point mode is indicated by a green color and allows you to specify cells by pointing to them with CTRL and the arrow keys. Edit mode is indicated by a blue color. While in edit mode, you may use the standard ATARI editor commands. You may toggle

between the two modes by pressing the ATARI logo or inverse video key.

While in the NUMERIC entry window, you may press [OPTION] or [SELECT] to call up the two function reference screens.

Command

The following commands are available on the COMMAND sub-menu.

FORMAT JUSTIFY LEFT (/FL range)

The data in the specified range will be left justified to the margin.

Example: /FL A1:D10

FORMAT JUSTIFY CENTER (/FC range)

The data in the specified range will be centered.

Example: /FC A1:D10

FORMAT JUSTIFY RIGHT (/FR range)

The data in the specified range will be right justified to the margin.

Example: /FR A1:D10

FORMAT MARGIN (/FM value range)

This command reserves the number of columns specified by value in the selected range of cells. This can be used to reserve space between adjacent columns of data.

Example: /FM2 A1:D10

FORMAT PROTECT (/F type range)

This command protects the selected cell range. The type of protection is as follows:

Type V to protect values from recalculation.
O to override entry into the cell.

Example: /FV A1:D10

FORMAT DOLLARS (/F$range)

This command formats the selected cells to display a leading dollar sign "$".

Example: /F$ A1:D10

FORMAT COMMAS (/F,range)

This command formats the selected cells to insert commas every three digits to the left of the decimal point for large numbers.

Example: /F, A1:D10

FORMAT PERCENT (/F%range)

This command multiplies the contents of the selected cells by 100 and displays a trailing percent sign "%". The internal value is unchanged.

Example: /F% A1:D10

FORMAT PRECISION (/FP value range)

This command sets the number of places to the right of the decimal place to display. The default value is two places.

Example: /FP3 Al:D10

FORMAT NUMBER (/F type range)

This command sets the numeric notation to be used. Valid entries for the type are:

Type . for fixed
F for floating
S for scientific
E for engineering

Example: /FS A1:D10

FORMAT SIGN (/F type range)

This command sets the manner in which negative numbers are displayed. Valid entries are:

Type - for leading minus sign
(for parentheses
D for DR/CR

Example: /F(A1:D10

GLOBAL FORMAT (/FG type)

This command formats all cells which are not individually formatted. Valid entries are:

Type L for left justified
C for centered
R for right justified
M value for margin
V to protect values
O to override protected entry
$ for dollar sign
, for comma insertion
% for percent
P value for precision
. for fixed
F for floating
S for scientific
E for engineering
– for minus
(for parentheses
D for debit/credit

Example: /FG$

GLOBAL UNFORMAT (/FUG type)

This command unformats all globally formatted cells based on the specified format type.

Type $ for dollars
, for comma insertion
V for value protection
O for override protected entry
% for percents

Example: /FUG$

GLOBAL WIDTH (/FGW value)

This command globally sets all column widths that are not individually set. Valid entries are:

Value 1 to 36 characters

Example: /FGW12

GLOBAL ERASE (/E#)

This command erases the entire worksheet.

GLOBAL RECALC (/R type)

This command establishes the recalculation parameters for the worksheet. Valid entries are:

Type (RETURN) for normal recalculation. This recalculates all cells not protected by the protect value command. This is equivalent to pressing (START) to recalculate the worksheet.

F for forced recalculation. This recalculates all cells without exception.

A for automatic recalculation.

M for manual recalculation.

C for column priority.

R for row priority.

Example: /RM

GLOBAL TXT MODE (/type)

This command sets the text mode. Valid entries are:

Type O for overflow text. This is the default mode.

B for bounded text mode. Text entered will not overflow into adjacent cells.

Example: /B

WIDTH (/FW value range)

This command sets the width of the selected columns. Valid entries are:

Value 1 to 36 characters.

Range A to DX column references.

Example: /FW12 B:D

UNFORMAT (/FU type range)

This command unformats the selected cells based on the format type. Valid entries are:

Type $ for dollars
, for comma insertion
V for value protect
O for override protected entry
% for percents

Example: /FU$ A1:D10

COPY (/C source destination)

This command copies the formulas in the source range to the destination range. Valid entries are:

Source	Destination
one cell	a row or column segment
a row segment	a block of rows
a column segment	a block of columns

Example: /C A1:A10 B1:D1

MOVE (/M source targetcell)

This command moves the source block of cells to the block of cells whose upper-left corner is specified. No cell references are changed.

Example: /M A1:D10 A25

INSERT (/I type location)

This command inserts a row or column at the specified location. Valid entries are:

Type R for row
C for column

Location 1 to 255 for row
A to DX for column

Example: /IR 20

DELETE (/D type location)

This command deletes a row or column at the specified location. Valid entries are:

Type R for row
C for column

Location 1 to 255 for row
A to DX for column

Example: /DR 20

ERASE (/E range)

This command erases the specified cells.

Example: /E A1:D10

GOTO (/G cell)

This command jumps the cursor to the specified cell.

Example: /GD10

PRINT (/P type range)

This command prints the selected information on a printer. Valid entries are:

Type W for worksheet
C for contents (formulas)

Example: /PW A1:D10

SORT (/S type source sortcolumn targetcell)

The SORT command orders rows in the source range based on the sort column and writes them to the block of cells whose upper-left cell is given. Valid entries are:

Type A for ascending
D for descending

Example: /SAA1:D10 A A20

WINDOW (/W type synch location)

This command creates a window at the selected location. Valid entries are:

Type (RETURN) for single window.
V for vertical window.

H for horizontal window.

Synch S for synched
I for independent

Location Any valid cell pointed to with the cursor.

Example: /WHS

TITLES (/T type location)

The TITLES command allows you to fix a selected column and/or row on your display. Valid entries are:

Type (RETURN) for cancel titles.
V for vertical.
H for horizontal.
B for both.

Location Any valid cell pointed to with the cursor.

Example: /TB

HEADINGS (/H)

This command toggles the column and row headings on and off. You may need to use this before saving as a text file or before printing your worksheet.

USE LBLS (/U cell)

This command declares the row and column that intersect at cell as label row and column. Once declared, you may reference cells using the labels in the designated row and column separated by an underline character "_".

Example: /U B2

SPECIAL CHARACTERS

The following characters have special meaning to *SynCalc*:

\# If entered as a first cell address in a destination range, this specifies the entire worksheet.
Example: /PW#

! If entered as the second cell address in a range, this specifies the lower-right cell of your worksheet.
Example: /G!

; In expert user mode, this represents the current cursor location.
Example: /E;

Data Loading and Saving (DIF)

SynCalc allows you to save the results of your worksheet in what is called DIF (Data Interchange Format). This format saves the current displayed value and not the underlying formula or format options. Data stored in this format can be ready by other programs, such as *SynFile+* and *SynTrend* (see Sharing Information for more details).

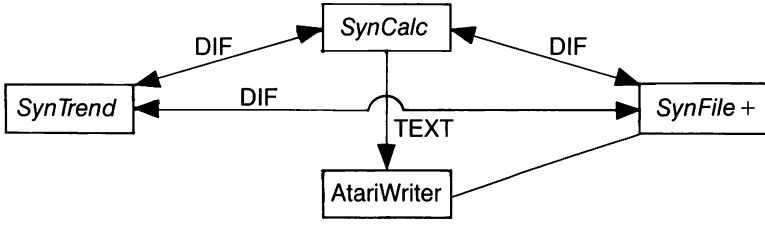
These functions are accessed from the LOAD and SAVE options of the LOAD/SAVE sub-menu. Several enhancements have been added to increase the flexibility of DIF files. Specifically, when loading DIF data, *SynCalc* allows you to select from several matrix operations:

Overlay: Replace existing data with incoming data.
Multiply: Multiply each incoming cell by the current cell.
Add: Add each incoming cell to the current cell.
Divide: Divide each current cell by each incoming cell.
Subtract: Subtract each incoming cell from the current cell.

These DIF load options facilitate the easy consolidation of similar data matrices.

Sharing Information

SynCalc has been specially designed to allow the sharing of information with *SynFile+*, *SynTrend* and AtariWriter. The following diagram shows how *SynCalc* relates to these other programs:



SynCalc and DIF

SynCalc uses DIF (Data Interchange Format) as a means of standardizing the representation of data. The DIF format essentially saves each row or column of your data matrix in sequential order top to bottom and left to right. While the full precision of each value is preserved, the underlying formula and format options are ignored.

SynCalc to *SynFile+*

This format, DIF, is used to share information with both *SynFile+* and *SynTrend*. *SynFile+* has an option on its FILES sub-menu which allows the conversion of DIF files to *SynFile+* format. The steps for passing data from *SynCalc* to *SynFile+* are as follows:

1. From *SynCalc*: Press (OPTION) for Main Menu.
2. Move the cursor to LOAD/SAVE and press (RETURN).
3. Select SAVE from the sub-menu by positioning the cursor and pressing (RETURN).
4. Select DATA by positioning the cursor and pressing (RETURN).
5. You may now select ROW or COLUMN. If you select ROW, each row of your data matrix will be converted to a record in your *SynFile+* file. If you select COLUMN, each column in your data matrix will be converted to a record in your *SynFile+* file.
6. Next you must specify the cell range to save by giving the upper-left and lower-right cell positions of the desired area.
7. You may now select the drive number and enter the file name. The ".DIF" file extender will be automatically added to identify it as a DIF file.
8. From *SynFile+*, select the DIF ◊ *SynFile+* option from the FILES sub-menu. By then selecting your file and supplying a destination file name, your DIF file will be converted to a *SynFile+* file. Each field in the record will be positioned at the far left of the screen and assigned the names (A,B,C,D, etc). You can then go to the Create module and re-arrange the form or change the field names.

Some Restrictions

You should not attempt to convert a data matrix which will result in more than 21 fields in your form. *SynFile+* takes its record format from the first record read.

The process of passing data from *SynFile+* to *SynCalc* is quite similar. Simply convert your *SynFile+* data file to DIF using the *SynFile+*◊DIF option on *SynFile+*'s FILES sub-menu. This DIF file can then be loaded into *SynCalc* by following the instructions in the Data Loading and Saving section of the manual.

SynCalc and *SynTrend*

SynTrend consists of two programs, *SynGraph* and *SynStat*. *SynGraph* uses DIF files directly and any data saved from *SynCalc* using the DATA save will be compatible. SynStat has a conversion routine which converts multiple DIF files to a single SynStat data file. By using this utility, data from *SynCalc* can be accessed by SynStat.

SynCalc and AtariWriter

Worksheets can be saved in text file format to be merged with AtariWriter. The steps are as follows:

1. Create your worksheet in *SynCalc*.
2. Press [OPTION] to get the Main Menu.
3. Select LOAD/SAVE from the Main Menu.
4. Select SAVE from the LOAD/SAVE sub-menu.
5. Select TEXT from the next screen. This specifies that the data will be stored as a text file, preserving format options with a return character at the end of each line.
6. Specify the range of cells to be saved.
7. Select the drive number.

8. Enter the file name.

Once the file has been saved, the sub-menu will disappear. The text save will include the headings if they are on at the time of the save.

This file will receive an extender of ".TXT" designating it as a text file. This file can then be used by AtariWriter or "included" as a print file.

VisiCalc and *SynCalc*

Worksheets created with VisiCalc can be converted to *SynCalc* format. If you are upgrading from VisiCalc to *SynCalc*, this conversion utility will save you from having to reenter your previously created VisiCalc worksheets.

The VisiCalc to *SynCalc* utility (VC▸SC) is listed on the LOAD/SAVE sub-menu. Be sure to save any current work before using the conversion utility. The conversion utility is a separate program on your program disk.

PRESS [OPTION] for the Main Menu.
Move the cursor to LOAD/SAVE with [CTRL] and the arrow keys and:
PRESS [RETURN] to bring up the LOAD/SAVE sub-menu.
Use [CTRL] and the arrow keys to move the cursor to VC▸SC and:
PRESS [RETURN].

You will now be prompted to insert the program disk and to,
PRESS [RETURN].
With the program disk in drive 1:
PRESS [RETURN].

The conversion utility will load. Once loaded, you'll be allowed to select the drive number containing your VisiCalc data disk.
PRESS (RETURN).

After specifying the drive number, a listing of all VisiCalc files in the selected drive will appear. Simply move the cursor to the file you wish converted and:
PRESS (RETURN).
Select destination drive number and:
PRESS (RETURN).

The conversion utility will process the file, writing it to the originating data disk under the same file name, but with the ".SC" extender. Any entries which cannot be converted will be changed to text entries containing the characters that *SynCalc* could not process.

SynCalc Won't Load

If *SynCalc* won't load, check the following:

A. Make sure there are no cartridges in the cartridge slot(s).
B. The cable between the computer and the disk drive should be in place.
C. At least 48K of RAM must be installed.

At this point it most likely has something to do with your disk drive. If you have more than one drive, try loading from the other one (don't forget to set the disk code number to 1). Also try loading other programs from your disk drive (sometimes this will work, but because of speed variations, you still won't be able to load *SynCalc*).

Hints For Saving Space

1. The first thing is to think of the sheet as a rectangle and try not to have too many empty spaces in the sheet itself.
2. Use a cell reference rather than a constant because a cell reference only takes half the memory of a constant.
3. If a formula contains only constants, its better to calculate the result of the formula and enter that result rather than the entire formula. This may save considerable space.
4. Save your worksheet to disk, clear the worksheet, and reload your saved worksheet.

Hints For Improving Speed

1. The main thing is to only calculate something once and then refer to the cell that contains the result rather than continuously recalculating.

2. It is faster and more accurate to perform multiplication functions than it is to raise a value to an integer power.

Error Messages

Error	Indicates	Explanation and Suggestions
2	Insufficient Memory	Make sure you have the required amount of RAM. If you are sure that you meet the minimum RAM requirements and the error persists, you may have a hardware problem.
3	Value Error	An attempted calculation has been made using a value which is out of range. This may be caused by an illegal data value.
11	Floating Point Overflow/Underflow	Calculation resulted in a divide by zero or a reference to a number with absolute value less than 1E-98 or greater than or equal to 1E-98.
136	End of File	Encountered premature ending of data file. This may indicate a bad disk file and can be caused by media failure or hardware problem.

138	Device Timeout	Requested peripheral device did not respond within the required time. Check to be sure your disk drives, printer, etc., are properly connected and that they are turned on. If the problem still persists, you may have a hardware problem.
139	Device NAK	The peripheral device cannot respond. Check your cables for proper connection.
140	Serial Frame Error	Device to computer communication is garbled. This is very rare and is fatal. If it occurs more than once, have your hardware checked.
141	Cursor Out of Range	Attempted to locate the cursor outside the valid range.
142	Serial Bus Overrun	Data is being sent to the computer too fast. This is very rare and is fatal. If this persists, have your hardware checked.

143	Checksum Error	Garbled data is being sent over the Serial Bus. If this persists, have your hardware checked.
144	Device Done Error	Device is unable to execute the command and can be caused by: 1. Attempting to write to a write protected disk. 2. Attempting to write to a disk formatted in another density. 3. Media failure causing a bad sector on the disk. 4. Hardware problem.
162	Disk Full	There is no more room left on the disk. Try using a different disk to save your data.
164	File Number Mismatch	The sector links in your file are bad. This can be remedied using a sector editor program like DISKFIX from the ATARI Program Exchange.

165	File Name Error	The file name entered contains illegal characters. Valid characters are A-Z, 0-9, and the the first character must be a letter of the alphabet.
169	Directory Full	The space allocated for the directory has been filled. Use another data disk.
170	File Not Found	Attempted to access a file not in the directory. Make sure you have correctly entered the file name and are accessing the correct drive.
173	Bad Sectors at Format Time	Encountered bad sectors while formatting the disk. Try another disk. If the problem persists, have your disk drive checked.

Glossary

Access: The method (or order) in which information is read from or written to a diskette.

Argument: A combination of numbers that produce a result or value of a function.

BASIC: Beginner's All-purpose Symbolic Instruction Code.

Bit: Abbreviation of binary digit. The smallest unit of information, represented by the value 0 or 1.

Block: Any group of data handled as a single unit by a program.

Boot: The process of initializing the computer for use by automatically clearing memory and loading the first few instructions which initiates all other instructions. This gets the computer started.

Byte: Eight bits. Approximately one character.

Cell Address: The cell address is the column letter and row number of the cell (i.e. F25: column F, row 25).

Cell Block: A position on the worksheet into which text, label or numeric entries are made.

Characters: Letters of the alphabet, numbers, punctuation marks, graphic symbols or any combination thereof.

Coordinate: A set of numbers used in specifying the location of a point on a line.

CPU: Central Processing Unit. The "brains" of the computer. Logic and control functions are performed in the CPU.

CRT: Cathode Ray Tube. The television receiver or monitor used to display computer output.

CTRL: Control key, also written as CONTROL on some computers.

Data: Information of any kind.

Data Bank: An organization of data files containing information or reference material on a particular subject or subjects.

Data Diskette: The diskette upon which your data is stored.

Data File: A system of information organization on disk.

Default: Condition which exists when no instructions to the contrary are given to the computer.

Delete: Erasing or changing data in a file.

Disk: Same as diskette.

Disk Drive: A device that rotates a magnetic disk and accesses its data by means of a read/write head.

Diskette: The 5-1/4 inch magnetic storage medium on which data is stored.

Echo: The return of a transmitted signal back to its source.

Error Message: Any of a number of prompts which appear on your screen when you have attempted a function out of its proper order, pressed the wrong key or incorrectly entered a command.

Exponent: A symbol written above and to the right of a mathematical expression to indicate the operation of raising to a power.

Expression: An individual argument or set of individual arguments separated by commas and enclosed in parentheses.

File: A collection of data on disk.

File Name: A File Name is the label for a file which should give some indication of the file's contents. For example: Finances, Budget, Checking, etc.

Formatting: Preparing a new disk for information storage. Formatting a disk causes any information on that disk to be erased. This should not be confused with columnar format.

Formulas: A formula is a calculation instruction like A1 + 100-A3. This translates as taking the value at cell A1, adding 100, and subtracting the value at cell A3.

Function: A computation built into the computer that can be called for by the program.

Hardware: The electronic components of the computer system.

Input: To transfer data from outside the computer onto your disk or into the computer. This is a data transferring operation.

Integer: The natural numbers, the negatives of these numbers and zero.

K bytes: Approximately one thousand bytes.

Label: A label is a title designation for a column or row that indicates the contents or nature of the data in that column or row.

Load: Putting a created file into the system for changes, modifications, printing or retrieval.

Memory: Where information is stored in the computer.

Menu: A list of options available in the program.

Menu Driven: A program operated by a program-generated list of options.

Output: The transfer of data from inside the computer to outside, such as to a printer.

Parameters: Definable characteristics whose values define the values and limitations of a system.

Program: A sequence of software instructions given to a computer for the performance of certain functions or tasks. A program must be in the language that the particular computer understands.

RAM: Random Access Memory

Range: A series of cell blocks in either a straight row or column.

Read: The entering of data from the diskette to the computer

Save: The process where data is written from memory to disk.

Scientific Notation: A floating point number system where numbers are expressed as products consisting of a number between 1 and 10 multiplied by a power of 10.

Scrolling: Moving text vertically or horizontally on the screen so that portions which do not fit on the screen at one time can be viewed.

Software: Computer programs.

Special Characters: A character that can be displayed by a computer but is neither a letter nor a numeral. Punctuation marks are special characters. So are the ATARI graphics symbols.

Sub-Menu: The menu generated within the Main Menu by pressing (RETURN).

Synchronized Scrolling: The simultaneous scrolling in two separate sections of the worksheet.

Syntax: A connected or orderly system of letters and numbers. A syntax error results in file names where there is an incorrect usage of symbols in the name. File names specifically exclude graphic symbols, punctuation marks, spaces and other special symbols and the first character must be a letter of the alphabet.

Update: Making new entries on an already created worksheet.

User: An individual who is using or operating a system of hardware and software.

Wraparound: When the cursor reaches the right edge of the screen, it disappears and "wraps around" to the beginning of the same or next line.

Write: The transfer of data to a magnetic diskette.

Write-Protect: A means of protecting a disk from having data written to it.

Index

Absolute value, 100, 102
Address, 16, 42, 45
Arc cosine, 100, 102
Arc sine, 100, 102
Arc tangent, 100, 102
Automatic repeat, 20
Average, 101, 103
Backups, 39, 131
Calculations, 26, 71, 73
Cell pointing, 30
Centering, 53, 115
Column headings, 67
Column widths, 60, 80
Commas, 54, 57, 78, 116
Command, 13, 115
Common log, 100, 105
Copy, 41, 50, 74, 77, 121
Corrections, 22
Cosine, 100, 103
Count, 101, 103
Cursor memory, 24
DIF, 125
Delete, 83, 122
Delete file, 113
Diskettes, 6
Direct cursor movement, 21
Display formats, 17, 53, 95
Dollars, 54, 57, 116
Editing, 26, 32
Entering data, 70
Erase, 23, 122
Error messages, 132-135
Expert user commands, 11, 111-125
Exponent, 100, 104
Exponential notation, 98

Fixing titles, 58, 81
Format commands, 115
Formulas, 16, 42, 98
Format disk, 113
Formatting, 17
Functions, 99-111
Future value, 101, 104
Global, 65, 93
Global erase, 65, 96, 119
Global format, 95, 118
Global recalc., 94, 119
Global text mode, 96, 120
Global unformat, 95, 118
Global width, 95, 119
Glossary, 135-141
Goto, 21, 123
Headings, 86, 124
If, 101, 104
Insert, 83, 122
Integer, 100, 105
Justify, 52, 79, 115
Labels, 16, 69, 90
Left justify, 53, 79, 115
Load data, 112
Load/Save, 12, 17, 111
Load worksheet, 35, 111
Lookup, 101, 105
Main Menu, 11
Main screen, 11
Margin, 54, 116, 118
Maximum, 101, 106
Mean, 101, 106
Memory indicator, 10
Message line, 11
Minimum, 107
Move, 85, 121

Natural log, 100, 105
Net present value, 101, 107
Number, 55, 97, 117
Numeric, 13, 26
Numeric entry window, 27, 114
Numeric entry mode, 32
Payment, 101, 108
Percent, 49, 54, 57, 75, 79, 117, 118
Pi, 100, 108
Precision, 54, 117, 118
Print, 88, 123
Protect, 54, 57, 116
Range, 15, 101, 108
Rename file, 114
Recalculation, 63, 94, 119
Right justify, 53, 115
Save data, 113
Save text, 113
Save worksheet, 33, 112
Saving, 33, 39
Sign, 55, 117
Sine, 100, 109
Sort, 87, 123
Standard deviation, 101, 109
Starting the system, 7
Special characters, 125
Split screen, 61, 81
Square root, 100, 109
Sum formula, 73, 101, 110
Tangent, 100, 110
Text, 13, 24
Text entry window, 24, 25, 114
Text overflow, 64
Titles, 58, 81, 124
Underlines, 67
Unformatting, 56, 95, 118, 121

Use Lbls, 124
Variance, 71, 101, 110
VisiCalc conversion, 114, 129
Window, 114, 123
Width, 60, 80, 119, 120
Write protect notch, 7
Worksheet, 9, 10, 14, 23, 33, 35, 88

Additional Error Messages

Error#	Message	Meaning
100	**Not Enough Memory**	Your system does not have enough memory to accept your last entry or command. See Hints For Saving Space on page 131.
101	**Out Of Range**	You have entered a cell address beyond the allowable limits.
102	**Illegal Command**	You have entered an expert user command which is invalid. See Reference section beginning on page 97.
105	**Cell Protected**	You have tried to enter data in a protected cell.
106	**Program Disk Not Found**	You have tried to access the VisiCalc to SynCalc program without the SynCalc program disk in Drive 1.

Condensed Printing

Here are the necessary steps for engaging condensed printing on several popular printers:

ATARI 825/1025

The ATARI printers will only accept the condensed print command at the beginning of a line. Therefore, in a left justified cell in the first column to be printed, enter the following as a text entry:

SHIFT-ESC
SHIFT-ESC
CTRL-T

Turn off the headings and print this cell as the first cell in your selected range.

Epson/Gemini

In a text cell, enter the following:

CTRL-O

When printed, this will engage the condensed print mode.

NEC/C-Itoh

In a text cell, enter the following:

SHIFT-ESC
SHIFT-ESC
Q

When printed, this will engage the condensed print mode.

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